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PROPERTY OF THE WORCESTER DISTRICT MEDICAL SOCIETY.

THE

TRANSACTIONS

OF THE

PROVINCIAL

MEDICAL AND SURGICAL

ASSOCIATION.

BOSTON MEDICAL LIBRARY ASSOCIATION

PROPERTY OF THE WORCESTER DISTRICT MEDICAL SOCIETY.

INSTITUTED 1832.

VOLUME VIII.

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BOSTON MEDICAL LIBRARY ASSOCIATION

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PREFACE.

In issuing forth the present volume of *Transactions* to the members of the Association, the Council are desirous of offering some explanation of the delay which has taken place in its publication. It was wished, in consequence of the importance attached to the valuable papers brought forward at the last anniversary, that these papers should be as soon as practicable in the hands of the members at large, and arrangements were entered into for the immediate printing and publication of the volume. The Council accordingly announced that it would appear early in November; when, however, the numerous drawings illustrating Mr. Ceely's paper on the Variolæ Vaccinæ were placed in the hands of the artists selected to engrave them, it was found that the time necessary for preparing the plates and colouring the impressions was far beyond what the Council had been led, by the representations of their publisher, to expect. The consequence has been that some months have elapsed since the time originally assigned for the publication. The Council, however, feel assured that the Association will neither regret this delay, nor the great expenditure which has been unavoidably incurred, when the value and importance of the information brought forward are duly estimated. Several questions of the utmost interest to

the welfare of the community generally, as well as the medical science, will be found to be most ably investigated. The variolation of the cow has been satisfactorily accomplished, with the effect of thereby generating the vaccine; the characters of the vaccine in the cow, with several of its irregularities, are carefully described and figured, and some of the most nearly allied spurious forms pointed out, by attention to which, many of the difficulties attendant upon a recurrence to the cow for renewed supplies of the vaccine may be obviated. Considerable light has also been thrown upon the value of the practice of retro-vaccination as a means of renewing and restoring the properties of lymph presumed to be deteriorated or otherwise altered by repeated transmissions through the human body; while the paper altogether must form a standard of reference for those who are engaged in the endeavour to extend and perfect the vaccine as a means of protecting millions from the fatal ravages of small-pox.

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PROCEEDINGS

AT THE

SEVENTH ANNIVERSARY MEETING

OF THE

PROVINCIAL

MEDICAL AND SURGICAL ASSOCIATION,

HELD AT LIVERPOOL.

COUNCIL MEETING.

The meeting at Liverpool, which had previously excited much interest amongst the faculty of that great town, more than realized the expectations which had been formed concerning it. The business was very heavy, and occupied the whole of Wednesday and Thursday, the 24th and 25th of July. There was a good attendance of the most influential members and friends of the Association; a deputation, consisting of Dr. Webster and Dr. Marshall Hall, representing the British Medical Association; and the following gentlemen from the

Medical Association of Ireland:—Sir James Murray, Mr. Carmichael, Dr. Jacob, Dr. O'Beirne, Dr. M'Donnell, and Dr. Maunsell. A Council Meeting took place on Wednesday morning, at half-past eleven, at the theatre or lecture-room of the Medical Institution, Mount Pleasant; Dr. Barlow, the retiring President, in the chair. Various committees then held their meetings in the rooms of the institution. Dr. Hastings read the Report of the Council for the past year, together with the various resolutions, *pro forma*, as preliminary to the General Meeting. The whole were adopted with but little alteration. The resolution referring to the choice of a place for meeting at the next anniversary produced a lengthened discussion.

Dr. Hastings stated that he had received communications respecting the subject from various places. A strong inclination had existed in the Society to meet in London, and no doubt they would be received there with pleasure; but he concurred with many of the members that the time was not arrived when they could go there with advantage. Whether that was the general opinion of the members he could not say. Cambridge had next been recommended, but existing local difficulties prevented such an arrangement; it would also be impracticable at present for the Society to meet at Norwich, Leeds, or Newcastle. The Southern Branch at Portsmouth were very anxious to receive the Society. Dr. Forbes had also stated that it would be considered as a great boon by the Branch of that district if the Society would honour them by a meeting at Southampton.

Dr. Forbes, as President-elect of the Southern Branch, stated that he had canvassed the opinions of the members, some of whom had recommended Salisbury, others Winchester, Southampton, Chichester, and Brighton. The latter was the favourite place, but it was quite unprepared to receive them; Chichester was very small, and presented few attractions. Southampton, next to Brighton, was the most desirable place: it was particularly accessible, being on the line of the great western road, and the railway from London to Southampton would also be opened before that time. He was of opinion that it would be desirable to hold the Society's meetings in new districts, where its transactions were but comparatively little known, and this consideration was recommendatory of his motion, which was—that Southampton be the next place of meeting, and that Dr. Steed be the President-elect.

Mr. Martin, of Reigate, suggested that Dr. Forbes, being well known as a zealous member of the Association, should be the President for that occasion, and he knew that a worthier person could not be found. Dr. Hastings here explained that Dr. Forbes would be requested to read the Retrospective Address at the Society's meeting in Southampton, and therefore perhaps Mr. Martin would withdraw his proposition. Dr. Forbes observed, he could not possibly accept of a presidency in that town, but he should have much pleasure in rendering his assistance towards producing a Retrospective Address. He however put it to the Council whether the address would not be better completed were it divided into two parts—the one embracing the medical, and the

other the surgical topics; the former he himself would attend to, and perhaps Mr. Dodd would accept of the management of the latter; so that the labours and the honours would be more divided.

After the various resolutions had been agreed to, Mr. Hardy, the Secretary of the Newton Branch, in pursuance of a rule of the Society, applied for the sanction of the Council to some new rules which had been established by that Branch subsequently to its first connection with the Parent Institution.

THE FIRST GENERAL MEETING

took place shortly before three o'clock in the same room, which was attended by about two hundred of the members of the institution. Dr. Barlow presided, and delivered the following address:—

"Gentlemen,—In retiring from the office which, through your kind appointment, I have held for the past year, I shall delay the proceedings of the day for only a very few minutes, for there is so much necessary business to engage your attention, that I should be inexcusable if I were needlessly to trespass on time required for other purposes, and which can be so much better employed. Each year brings some increase of the business to be done at our anniversary meetings, and in the prospectus of this year's proceedings you may perceive that more hours are allotted for conducting them than on any former occasion. In our earlier meetings the whole business was transacted with ease in a single day; now, two days scarcely suffice. So fully also do the provisions made by our constitution, with the arrangements of the Council and Secretaries, embrace

all that we can beneficially attend to, that any lengthened address from me on the present occasion would be as superfluous as it would be ill-timed. Nevertheless, gentlemen, I cannot take my leave of you without a few parting words. And first, I must beg to return you my sincere thanks for the high honour conferred on me in being placed, even for the brief period of a year, at the head of this numerous and most important Association. To be so distinguished is an honour of which the most ambitious might be proud. If "*laudari a laudato viro*" be deemed the highest praise that can be conferred,—to hold, even for a season, the rank of "*primus inter pares*" is a distinction still higher; the one emanating from an individual judgment, the other being awarded by the collective voice of a whole community. That I have been deemed worthy of holding this rank, is the highest reward of professional labours that could have been bestowed on me; for of professional merit the profession alone can adequately judge. Their approval it is which gives real eminence, and to merit their favourable opinions should be the high aspiration of all whose ambition is pure and rightly directed. For the favour conferred on me in having been appointed your President, and for the personal kindness which I have invariably experienced in my intercourse with the members of the Association ever since it was first established, I beg leave to return to each and all my sincere and heartfelt thanks. I must detain you yet, gentlemen, for a single moment, while I offer my cordial congratulations on the rapidity with which our Association advances, and

the elevation which it has attained. There must be some intrinsic worth in an institution which can unite so many intelligent and reflecting minds,—which can congregate annually such numbers as attend our anniversaries, withdrawing them from arduous duties which we all know are of a nature not to brook interruption of any kind,—which can inspire so much zeal, and excite so much endeavour as our brief career throughout displays. Seven years ago we commenced with about fifty members; we now number in our ranks nearly twelve hundred. It is impossible but that a body so numerous, so intelligent, and so united, must henceforward exert a powerful influence over all that relates to the science or practice of physic. It will, I trust, ever be our care to insure that this influence be directed to praiseworthy ends; and that whatever measures we may find it necessary to pursue for attaining and establishing our own just rank in the political system, shall have the well-being of the community for their ultimate aim. In retiring from the chair, gentlemen, it is with peculiar satisfaction that I resign it to one so qualified to do honour to it as your respected President-elect, Dr. Jeffreys. It is not in Liverpool that I need descant on his merits, his unceasing endeavours to promote the diffusion of knowledge being here at least well known; but they are not unobserved even in places far distant, and the public voice, which rarely fails to award the meed of just praise to talents and energies devoted with sincerity and zeal to the public good, will assuredly enrol in the splendid list of public characters, eminent for litera-

ture and science, of which Liverpool may proudly boast, the name of my valued friend and respected successor in this chair, Dr. Thomas Jeffreys. To him I now relinquish it, with my best wishes for his welfare and happiness, and for the increasing and enduring prosperity of the Association over which he is about to preside."

Dr. Barlow then vacated the presidential chair in favour of Dr. Jeffreys, who immediately proceeded as follows :—

"Gentlemen,—Whatever may have been the motives, which gave rise to the first idea of inducing men of kindred feelings and pursuits to promote and establish meetings, for the purpose of imparting to each other views and opinions, conducive to their happiness and best interests as a body, there can be but one opinion as to the effect of the Association we are met to celebrate. Its beneficial results reflect much lustre on those under whose direction it was originally formed. Perhaps none exceed in zeal and energy the class of individuals I now address. Amidst personal privations from limited pecuniary resources, and difficulties arising from prejudices, often sufficient to weaken the exertions of the most ardent mind, we find the medical man ever ready cheerfully to promote every good work, encountering danger and obstacles of such magnitude, that the attempt to surmount them would, from dull understandings, or hearts dead to the purest and most ennobling of human affections, incur only the reproach of rashness or infatuation. The Provincial Medical and Surgical Association

has been one of the very first, by personal intercourse, by mental exertions, and by its publications annually issuing from the press, to grapple with these difficulties, and in a manner which has "grown with its growth, and strengthened with its strength," so as to justify no cold and qualified encomium, but one far surpassing the measure of my humble abilities to bestow. This truth may be judged of by the alacrity with which the members have responded to the summons of this, the seventh anniversary meeting; and there cannot be a better criterion of the impulse and interest which the resources of our annual assembly can call forth. It is difficult to say whether the gratification is most enjoyed by the promoters of the Association, or by those who have more recently joined us; the latter, however, equally share the fruits of our labours. It is scarcely to be expected that the seeds of science and literature can be so abundantly disseminated in this emporium of commercial greatness as in collegiate cities; but I am inclined to think that when the spark of ignition is once fairly kindled, it will burst forth into a brilliant and lasting flame. The example of six successive years, the manner in which the Association has been received, and the complete gratification visiting members have experienced, if I may be allowed to judge from my own feelings, ought to, and I am confident will, fill the hearts and minds of my medical brethren here with satisfaction; and we must be proud that Liverpool should be selected before other places, conspicuous for the illumination of the understanding, for the spread of those truths which advance the progress of knowledge, and

promote the welfare of society. I well know that hints have been thrown out, and apprehensions entertained, that the Association coming among us would only discover the poverty of our resources, and our inferiority when compared with the advancement of science and progress of improvement in other places; but I say, if this be really the case, which I hope I may be allowed to doubt, the step we are now taking is the way to render it the reverse. It is true we cannot grant classical honours, nor display a long list of names illustrious in the annals of letters, such as are to be found in our academical retreats; but we can evince an honest and well-directed zeal; and so long as we can remember a Roscoe, a Currie, a Brandreth, an Allanson, and a Park, now all resting in the silent tomb, it would be unpardonable in us not to record their talents and virtues, which, in spite of many disadvantages, enabled them to fill so large a space in the eye of their contemporaries, and whilst we resolve to emulate their worth, lead the rising energies of youth to improve their science. It is thus that Liverpool will take an honourable station among the places visited by the Association, and claim an equal share in the friendship of others, where we may in future be minded to meet. The visit of the British Association to this town was a novelty to which it will be pleasing to revert. Should such be the result of this meeting, how grateful will it be to myself personally, and to the gentlemen associated with me in the present arrangements. From the first dawn of my professional career it was my firm belief and conviction, that the mainspring of all professional attainments

rests solely with the individual himself, and that no position can be honourably and satisfactorily retained without feeling the conscientious and powerful stimulus of a deep and awful responsibility. On this solid foundation must the noble edifice of science be raised. To no station or pursuit in life does this maxim more strongly apply than to the medical profession; for our conduct should ever be such as to defy the most searching scrutiny, and court the most public investigation. An equally, if not more difficult task to perform, is to disperse those delusions of empiricism by which so many not only of the lower but of the higher classes of the community are led astray. But whoever thus acknowledges the foregoing principle to influence his conduct, must further confess a principle which, blended with mental cultivation, is so efficacious to the formation of the medical character, and only to be derived from that Supreme Being, who hath alike formed the minutest creature, and regulates the mind of him who sounds all the depths and heights of science. Surely if he watches with parental care the lives of all his creatures, he will protect and guide the men who go forth among their fellows to execute the purposes of his benevolence, in dispensing the blessings of health and soothing the severities of pain. 'Let him, therefore, who reads and observes, never forget that in all this, as in everything else, there is nothing casual, nothing purposeless, nothing undesigned, and that good ends have been intended, as good purposes have been effected; and that all creation presents to him who will examine it, the incontrovertible proofs of

a GREAT ARTIST, intending, designing, perfect in wisdom, absolute in power.'* When I look back to the very able manner in which the deservedly distinguished men who have preceded me in this chair have displayed the worth and usefulness of our Association, I am relieved from all copiousness of illustration and cogency of enforcement on these subjects. My learned and zealous friend and predecessor, Dr. Barlow, has most justly said, that 'the main objects for which we are associated, as stated in our fundamental constitution, are the advancement of medical science, and the maintenance of the honour and respectability of the profession.' These objects have never been neglected, and each succeeding year has afforded additional proof of the soundness of the principles on which they were based. Let us not then be driven from our purpose, though unfriendly spirits are abroad, who have amused themselves by commenting upon our designs. Such sentiments in others are calculated to augment our exertions, extend our views, and to link us together by the firmest bonds of mutual assistance. With harmony, and unity of feeling and purpose, let the good of mankind stimulate all our endeavours, without reference to the sources from whence they proceed. We shall have our reward in the approbation of all such fellow-labourers as are wise, and great, and good, and this after many of us shall have terminated our earthly career. In addition to the use I have made of Dr. Barlow's address, I should not stand acquitted to

* "Maculloch's Proofs of the Illustrations of the Attributes of God."

myself, were I not to seize this public opportunity of expressing my approbation of the able and courteous manner in which he filled his office at our last meeting at Bath, calculated indeed to inspire no common feeling of respect and gratitude. I think that you will one and all pardon me if I indulge in expressing the deep debt of gratitude we owe to our talented, zealous, and indefatigable Secretary, Dr. Hastings. Nothing I can say will add to his justly-established reputation, yet I cannot deny myself the gratification of giving utterance to the sentiments which I entertain in common with the members of the Association. The times in which we live are peculiar, and consequently influence every class of scientific men—the profession to which we belong, as well as others. It is not my business to descant upon the novelties and improvements of the day, that being the province of our learned and accomplished associate, Dr. Symonds, of Bristol, who will deliver the Retrospective Address; yet I cannot forbear quoting the remark of one of our most eminent honorary members, Sir Astley Cooper, whose anxiety to be with us on the present occasion was expressed to me in very warm terms, and who lately observed to me, that 'although science has advanced, men have retrograded. Where is our Newton, our Herschel, our Hunter, our Davy, our Priestley, our Black, or our Scheele? This,' he adds, 'is the age of application, not of discovery.' Let us then profit by that great and honest man's remark on a subject so consonant to his favourite habits of study; and make use of the means which Providence has placed in our hands, by practically

and more extensively applying the resources which a body of eleven or twelve hundred individuals can command, and which has not inaptly been denominated 'The Parliament of the Profession.'* Much has already been done, but much, even at this time, remains untouched, and which I am confident can only be effected by the concentrated talent, zeal, and vigorous industry, which I know and believe belongs to this enlightened and powerful body. (Loud applause.) We have to consider various and important subjects. One of these is that of 'Hygieia;' a subject in this country, comparatively speaking, overlooked, while it has been made a topic of unceasing investigation by our continental neighbours for nearly forty years. And this may be said without detracting from the just merits of those authors who have afforded effectual aid to the student by their writings on this subject. I will merely mention the names of those alluded to:—Dr. Southwood Smith, 'On the Philosophy of Health;' Dr. Andrew Coombe's 'Principles of Philosophy;' Dr. Robert Dunglisson, 'On Human Health;' Dr. Alexander Kilgour, 'On Higieine.' Dr. Hodgkin's 'Lectures, June, 1838;' and Dr. Garnett Dillon's 'Letters on the Mortality of the Metropolis' may also be noted;† and though last, not least in importance, our talented associate (now present), Dr. Maunsell's recent pamphlet 'On Political Medicine,' which is a highly valuable tract on medical police. Surely it must be considered no small part of the duty of a medical man to preserve health, as well as to

* See Dr. Hastings' Speech at the dinner at Cheltenham.

† See the *Morning Herald*, for September 4th, 1838.

combat disease; and this can only be done by vigilantly observing and making known local circumstances which lead to disease. I am indebted to a young member of the Association, now present, and a practitioner in this town, (Mr. G. Rogerson,) for some valuable suggestions on this question; but I must not add to the length of this address by unnecessary citations, and I think his observations are calculated to meet the public eye, from their good sense, caution, and constant reference to practice. Quackery and its systematic imposture,—prescribing druggists,—granting certificates for the insurance of lives,—the appointment of medical officers to hospitals, and their duties,—whether small or large establishments most desirable,*—also hospitals for incurables and convalescents,—are all objects of great importance, and are worthy of serious and most attentive consideration. We have already a committee appointed to 'watch over the interests of the profession;' would it not be very desirable to have local committees in every populous place throughout the kingdom where the Association has met, to collect more extensive information in detail for the same purpose, in connection with the general committee or section, which might condense in an annual report all that was collected from members who may be otherwise averse to communicate either improvements or evils? By these means a mass of facts and information would be elicited which may prepare us for an appeal to

* See *Pettigrew's Life of Baillie,* who says "it is not the number of cases a man has seen, but the manner in which he studies them," that gives him the advantage.

the legislature on a discovery which a gracious Providence intended 'for the healing of all nations,' and to which the eyes of the enlightened philanthropist turns with such intense concern; I allude to vaccination, a subject at present which not only calls for the attention of the Association, but requires legislative interference and authority; indeed I must be allowed to say, that the omission of it is an offence which cannot be too frequently reiterated, until the object is freely and fully complied with.* Neither time will now allow me, nor indeed does inclination prompt me, to interfere with the feelings of our junior brethren, because I am well aware that they have advantages which some of us wanted in the early days of our acquirement; there is, however, a disadvantage accompanying so great a good, and that is the propensity to promulgate opinions as unobjectionable, which the experience of a few years may greatly soften down, and possibly entirely change. Far from me be the wish to check the ardour of youth, or weaken the zeal for that science which we are met to encourage; but when such a man as Radcliffe has proclaimed, and Gregory repeated the same sentiment, it surely cannot be thought unworthy of being recorded here, and I bring it to your recollection, in their own words, which are these:—'*Cum juvenis eram et in arte medica adhuc rudis, adversum unumquemque*

* See an elegant little tract by Vigorniensis, not less valuable on account of its coming from the pen of a clergyman, the Rev. Dr. Card, of Malvern, well known from ecclesiastic and able literary productions. See also an interesting pamphlet, entitled *Answers to the Objections commonly brought against Vaccination*, by John Roberton, late Senior Surgeon in Ordinary to the Manchester Lying-in Hospital.

*morbum viginti ad minimum remedia possidebam; nunc vero, postquam in usu medicinæ consensuerim, viginti et amplius morbos novi, quorum ne unum equidem remedium habeo.'** The limits within which I am obliged to confine this introductory address will I trust be not improperly exceeded by my sketching out a brief account of a deceased colleague of the Association. Since our last anniversary meeting we have to lament the death of our highly-respected and venerable senior brother in Liverpool, Dr. John Rutter. He was an able, scientific, and honourable practitioner amongst us for about half a century, and no less conspicuous for the urbanity of his manners than by his anxiety to promote every scientific object in the profession, or indirectly connected with it; nor has he left any one more competent to supply his place, as our leader and guide, whether we look at his character as a consulting physician or as one always selected to preside over our medical meetings. He was by disparity in age removed far beyond all competition amongst us for the last ten years of his life; and previous to that period his seniority was always modestly assumed and cheerfully conceded. Most of our public institutions bear testimony to his intellectual labours, amongst which may be mentioned his attention in conjunction with the late Mr. Richard Heber, Mr. Roscoe, Mr. Clarke, and others, (I believe the late Rev. Dr. Frodsham Hodgson, Principal of Brazenose College, Oxford, who was a native of Liverpool,) in the formation of the Athenæum Library, and his exertions in forming our

* See *Gregory's Conspectus*, vol. i., p. 69.

first Botanic Garden, the catalogue of which he arranged and wrote. He was for thirteen years one of five physicians attached to the Dispensary, to which were then appended the sick wards or infirmary of the Workhouse, the Fever Hospital, a Pauper Lunatic Asylum, the Gaol, Blue-Coat Hospital, and other minor charities, now all under separate and distinct medical officers. The Liverpool Medical Library had only imperfectly existed for seventy years, and never, until his untiring efforts, did it meet with a suitable resting-place; it is now permanent within the walls of this the Medical Institution, to the arrangement, improvement, and duration of which establishment he devoted much of his time, and nobly contributed to the extent of one thousand pounds. He has also enriched the building by a bequest of minerals and books, valued at more than that amount, and he would, had he been spared, have done much more. Although neither his age nor his habits allowed him to attend and enjoy our anniversary meetings, he always took a very lively interest in the proceedings, and I frequently conversed with him upon the subject of the honour to be conferred upon us by this assemblage, from which he anticipated much satisfaction, and expressed an anxious wish that the medical meetings should be held within this building, the erection of which must be ascribed to his patronage. Dr. Rutter was a native of this town; he was a faithful member of that intellectual body, 'the Society of Friends,' and he died at the age of seventy-six, in affluence, the just reward of a well-spent life. The numerous attendance of his medical

friends at his funeral amply evinced their respect and esteem ; and I rejoice in having such an occasion to record my individual and personal experience of his abilities and uniform benevolence. I have now to bring this brief and I fear imperfect part of my duty to a conclusion, anxious to avoid prolixity and infringing upon the more important business of the meeting. The increased number of interesting subjects for discussion, the extent and demands of our connexions, both foreign and domestic, with the weight of matter for deliberation, will occupy so much time, that two days will prove scarcely sufficient. No one, I apprehend, can meditate dispassionately upon the objects of this Association without being alive to the power which it has of contributing to individual pleasure, professional advantage, and universal good. There may be 'a faulty spoke in the wheel of every great machine' which will afford matter for comment to those who are prone to hyper-criticism, but such minor points sink into insignificance, considered with the more extended views and prospects of beneficial results ; nay, it is better that our efforts should disregard these minor impressions than that the mainspring of our intentions should be disturbed, and the extent of our views not fully and happily confirmed.

I have now to request you will accept the pleasing acknowledgments of the local members for the honour you confer upon the town by your presence. No entreaty should ever have induced me to undertake the responsibility which awaits the individual who addresses you from this chair, had it not been from a thorough conviction of the advantages to be

derived from the efforts of the Association, not only to the profession to which I have always been zealously devoted, but also to any community which shall possess the advantage of its presence. I beg you will accept my expressions of gratitude for the attention with which you have favoured me upon this commencement of my official duties. I am fully sensible that neither my pretensions nor my claims have entitled me to this honour. Permit me to return my most heartfelt thanks to my medical brethren of the town who are fellow members, to the general Council, and to the members in ordinary, for the distinguished position in which they have placed me, rendering this the very proudest day of my professional life; and when the hour of separation arrives, that each of you must return to your professional duties at home, in the same proportion that I estimate the honour done to Liverpool and myself by this visit, will be the sincere regret with which I shall have to say—*valde vale.*"

After the applause with which this address was received had subsided, Dr. Hastings read the

REPORT OF THE COUNCIL.

The law of this Association, which makes it imperative on the Council to render an account, at each returning anniversary, of the condition and prospects of the institution, is very salutary in its tendency, for not only are those in whom this trust is reposed thereby reminded that they have an important duty to perform, but those occurrences

to which it is of consequence that the attention of the members at large should be directed are thus brought conspicuously forward, and every one may readily become acquainted with the aims and views of those who take an active part in the proceedings of the Association. On this account it is desirable that the Report should touch upon all the prominent circumstances which have occurred; though, in order that time may not be spent in details which might be otherwise more beneficially employed, it is necessary to condense this notice as much as it is practicable.

Happily the members have in the history of this recently formed Association no ordinary degree of encouragement; for without the slightest approach to exaggeration, it may be confidently affirmed that no institution has ever before been formed for the cultivation of medical science which has in the first seven years of its establishment succeeded in combining together, for the promotion of important objects, so large a number of the members of the several branches of the profession. Previously to the formation of this Association, the medical profession resident in the English provinces were dissevered, and had scarcely any common bond of union.

TRANSACTIONS.

Distinguished as many of the profession have ever been by their medical writings, there was no common provincial repertory through which these writings might come before the public. It was to supply this deficiency that the *Transactions* were originally proposed; and that they are in no small

degree calculated to answer the purpose designed, may be inferred from the fact that contributions have not been wanting to supply interesting and valuable papers, so that every year has produced a volume abounding in useful information. The seventh volume, which has been published since the anniversary meeting at Bath, is peculiarly rich in medical topography; and the Council are assured that the members in general participate with them the gratification they feel in observing that our foreign members take an interest in our proceedings, and enhance the value of the *Transactions* by their excellent contributions to its pages. The Council have frequently pointed out the paucity of Reports of Provincial Sanitary Institutions supplied to the Association: of the value of the information to be derived from such sources there can be but one opinion, and a comparatively small portion of industry and perseverance on the part of those who are connected with these establishments would afford most useful and interesting facts, from which conclusions highly instrumental in advancing the healing art might ultimately flow. Already the number of facts of this nature which have been collected in one town alone (Birmingham) is considerable, and your Council cannot but entertain the hope that future volumes of the *Transactions* may have more numerous contributions of this nature. Your Council also here take leave to allude to the recommendation in the Report of the last year that the members should forward the history of such cases as are of an interesting nature, though not of sufficient importance to be published

separately, to the Secretaries, with the view of their being classified upon some future occasion, when they shall be in sufficient number or of sufficient importance to render it desirable to publish them.

MEMBERS.

Within the last year the Association has received a considerable accession to the list of members, and they amount in number to eleven hundred and eighty.

DISTRICT BRANCHES.

Your Council have every reason to believe that the system adopted of dividing the Association into District Branches is operating favourably. In no other manner would the business be so easily arranged; and the respective annual meetings of the District Branches are admirably calculated to keep alive an interest in the proceedings of the General Association, at the same time that they afford opportunities of social and professional intercourse to many who are prevented by a variety of causes from being present at the General Meetings.

FINANCES.

It must be remembered, that the annual supply of a volume of *Transactions* to every member, free of any charge, is a very considerable drain upon the funds; and the liberality of our laws in this respect is worthy of notice, as such a custom is followed by scarcely any other Society. It makes it, however, the more incumbent upon members to pay their

subscriptions punctually, since every one to whom a volume is sent has so much value received, for which his subscription is very little more than an equivalent. Your Council, however, notwithstanding the heavy disbursements for printing, and for the engraving and colouring of the plates, and also the existence of arrears in subscriptions to a considerable amount, have to announce the gratifying fact, that the actual receipts for the year exceed the disbursements. Your Council also assure the members that on all occasions a due exercise of economy is studied ; and, at the same time, care is taken so to expend the funds as to make the *Transactions* creditable to the Association.

The income for the last year is	£1324	1	4
The expenditure of the last year is	722	6	9
The balance is	£601	14	7

PAROCHIAL MEDICAL RELIEF.

Your Council have still to regret that they are not enabled to report any very satisfactory progress in the settlement of this unhappy question. They regret to say that, notwithstanding the decided recommendation by the Parliamentary Committee to the contrary, the system of "Tender" is still persevered in by several of the Boards of Guardians, under the sanction of the Commissioners. The Poor Law Committee have not been inattentive to their duties since they last reported to the members; and, in particular, they have been in frequent intercourse with Mr. Serjeant Talfourd, who is warmly

interested in procuring justice for those of our professional brethren who are oppressed by the provisions of the New Poor Law. It is the advice of this gentleman, on whose judgment and acquaintance with parliamentary business the Council have the fullest reliance, that no further step shall be taken until the next Session of Parliament, when Government must again bring forward a bill, either to continue the powers of the Poor Law Commissioners, or to substitute another scheme in lieu of the present: the learned Serjeant will then undertake to do all in his power to introduce clauses into the new bill to remedy those defects which the Parliamentary Committee have, in their own Report, stated to exist. Your Council, therefore, recommend that the Committee which was appointed last year to watch the further progress of the subject through parliament,and to suggest to the Council from time to time such measures as appear to them necessary to meet circumstances as they arise, be requested to continue their services.

VACCINATION SECTION.

The Section appointed to consider the present state of vaccination have assiduously endeavoured to collect accurate information on that subject. The Report is prepared, and will be submitted to the Association at this meeting.

BENEVOLENT COMMITTEE.

The Committee for managing the Benevolent Fund have continued their efforts to promote the

prosperity of this interesting portion of our undertaking, and will likewise present a Report detailing their proceedings for the last year.

MEDICAL REFORM.

Your Council beg to assure the Association that, in their multifarious labours, they never lose sight of the general interests of the profession, nor of the necessity of procuring for it a better legal constitution. To this object the energies of the Association may be worthily and beneficially directed. Circumstances, however, have hitherto repressed any direct endeavour on the part of the Association to call the attention of the legislature to the subject. These circumstances will be explained in the Report of the Committee deputed in 1837 "to watch over the interests of the profession," which will be presented to the present meeting. For this Report, and for the recommendation with which it will conclude, the Council earnestly solicit the favourable consideration of all who wish to see the profession rescued from a state of unseemly anarchy and confusion, and placed under the rational government and legal protection to which, as an important branch of civil polity, it is so justly entitled.

EMPIRICISM.

Intimately connected with the question of medical reform is that of quackery, the evils of which were deemed of sufficient importance at the last anniversary meeting to induce the Association to empower

the Council to form a Section for the consideration of the nature, extent, and evils of quackery, and to report on the same at the next anniversary meeting. The Council considered that the wishes of the general body could not be more efficiently carried into effect than by appointing Dr. Cowan, of Reading, who has so meritoriously given much time and attention to this important subject, to be Chairman of the Section, from which, at the present meeting, a short Report will be presented. Its members, however, seem inclined to the opinion that all active measures, in relation to the suppression of quackery, had better be delayed, in the hope that a better organization of the profession may render the suppression of quackery a more practicable undertaking than it appears at present to be. In the meantime, to use the words of a former Report, the Association may be employed in the enquiry into the nature of the evils, their extent, and remedies, by which means they may be enabled, at the proper season, to render valuable aid in legislating upon this question. The Council therefore advise that the Section they have appointed, be requested by this meeting to continue their investigations on this subject.

SECTIONS.

In the last Report your Council adverted to the propriety and expediency of appointing, from the Association, Sections for the investigation of particular departments of medicine. The meeting at Bath coincided in that recommendation, and appointed a Section to whom the replies to the queries

on vaccination were referred. The result of this measure will be found to have been already highly beneficial, and your Council request this present meeting to empower them, during the ensuing year, to propose subjects for investigation by Sections of the Association, if circumstances should arise to render it probable that such a proceeding would be attended with satisfactory results.

REPORT UPON SURGERY.

At the anniversary meeting at Bath, and subsequently to it, some influential members regretted that no special Report had yet issued from the Association on the progress of surgery, and a wish was expressed that this subject should be taken into consideration by the Council. After due deliberation, your Council fully concurred in the propriety of a Report being presented to the anniversary on the progress of surgery, and they happily prevailed upon Mr. James, of Exeter, to devote his time and energies to the performance of this duty, for which his acknowledged zeal in the prosecution of the literature of his profession so eminently qualifies him.

NOTICES OF MOTIONS.

Your Council beg to inform the members that a notice has been given to the Secretaries by Dr. Symonds, of Bristol, that a resolution touching the late regulations of the College of Surgeons, which are considered injuriously to affect the Provincial Medical Schools, will be submitted to this Meeting.

A notice also of a motion by Dr. James Johnstone stands for consideration at this meeting, to this effect:—"That any member of the Association wishing to compound for his annual subscription, may do so by paying ten guineas, which amount shall in all cases be invested in public securities, and the interest arising therefrom be appropriated to the general purposes of the Association."

CONCLUSION.

Having touched upon so many topics, and indicated the general bearings of the proceedings in which the Association is so meritoriously and so appropriately engaged, your Council feel it altogether unnecessary to prolong this Report by any general remarks on the auspicious prospect of the affairs of the Association. To carry on with any degree of success, commensurate with their obvious importance, the several undertakings in which the members are engaged, will require judgment, discretion, zeal, perseverance, and union. Your Council would earnestly entreat every member seriously to consider the magnitude of the objects which are at stake, and then determine whether he can be justified in withholding his exertions from a cause in which the best feelings of humanity prompt him to engage,—as it is intimately connected with the progressive advancement of medical knowledge, and directly tends to the augmentation of human happiness.

CHARLES HASTINGS,
JAMES P. SHEPPARD.

Mr. Carmichael, in moving the adoption of the Report, agreed with the assertion, that until the existence of this Association, there was no bond of union amongst medical men. He was happy to say that cause of complaint no longer existed ; for he beheld around him men of profound intellect and science—men who for the future would form that bond of union and that bulwark to the profession which is so necessary to its efficiency and its interests. The medical profession had suffered more than any body of men for want of that desirable union, and at a time when the Government of this country scarcely recognized them as a profession, but extended its protection to the utmost extent to another profession—the law. This fact sufficiently proved the necessity of a combination amongst themselves for the purposes of self-protection, even were there no other proof to be adduced, and to say nothing of the abominable tender system enacted by the provisions of the Poor Law Bill. Of the errors of that system he had spoken at a meeting of the Medical Congress of Dublin, pointing out its injurious tendencies ; upon which a Poor Law Commissioner stated that that system should not extend to Ireland. Now he (Mr. Carmichael) wanted to know what could have induced the Commissioner to make this assertion, unless it was through his knowledge of the determined resistance likely to be made to the provisions of the Act by the profession at large. While the power of granting qualifications to practitioners was vested in sixteen or seventeen corporations, that profession would be oppressed, and very deservedly so, if they did not exhibit a proper spirit of determination in putting

down such a system. From the Report which had just been read, he had much pleasure in finding that the question of medical reform had again been brought forward. The necessity of procuring a better constitution for the profession was urged; but the greatest unity of purpose was necessary to effect that object. He then moved—

That the Report of the Council now read be adopted and printed.

Sir James Murray seconded the motion. He could not avoid doing himself the gratification of congratulating his countrymen upon the beneficial results to be expected from the combined influence and talent of the members of the Association then present, as also of its numerous members and supporters elsewhere. In Ireland the profession had been stigmatized as a disunited and discontented race; but he hoped that for the future they would yield to the example held out to them by their brethren of England. They had seminaries for instruction in Ireland; but for want of harmony they had injured each other, instead of rendering service. With respect to the tender system, he hoped the time was not very far distant which would witness its abolition. Barristers and attorneys were not required to tender for their labours upon municipal points, then why should the system be resorted to when the poor were to be relieved, disease prevented, or life saved? Why should they be called upon to put their talents out to auction, by which system men whose education had cost them comparatively nothing seized on that which was denied to others, whose course of education had cost them years of intense study and great expense?

Dr. Webster observed that he did not appear before them to defend the principle of the Poor Law; but he thought it justice to say that something had been done, and was still in contemplation (thanks to the exertions of this and other Associations), to obviate the difficulties lying in the way of the profession. In a communication he had lately had with one of the Poor Law Commissioners, he was informed that after the present year the tender system would not be allowed to exist. That system had been carried on partly with the authority, certainly with the tacit sanction of the Poor Law Commissioners, but whose full powers of restriction in those matters were not at all times exercised. From the representation however which had been pressed strongly upon them, the Commissioners now saw the necessity of doing away entirely with the system of tender; and this result pointed out the great necessity and the good effects of perseverance in the profession, and showed what could be done by the exercise of those qualities. He (Dr. Webster) had also recently seen a letter written by a medical gentleman asking for some parochial appointment, "seeing that the Poor Law Commissioners began now to treat the profession something like gentlemen."

The motion having been put from the chair, was unanimously adopted.

Dr. Holme, of Manchester, moved, and Mr. Dawson, of Liverpool, seconded—

That the thanks of the meeting be given to Dr. Barlow, the retiring President, and that he be appointed a permanent Vice-President of the Society.

Dr. Robertson, of Northampton, moved—

That the thanks of the meeting be given to the Secretaries of the Association, Dr. Hastings and Mr. Sheppard, and that they be requested to continue their services.

He had not the pleasure of a personal acquaintance with Mr. Sheppard, but Dr. Hastings had been a friend of his for many years standing; and it was with the greatest warmth of feeling that he bore testimony to his great talent and unwearied and indefatigable zeal for the advancement of medical science.

Mr. Tudor, of Bath, seconded the resolution, which was carried with great acclamation.

Dr. Hastings rose and said he would not trespass long upon the time of the Society. Mr. Sheppard had requested him to state his regret at not being enabled to attend at their meeting that day, as nothing would have afforded him greater pleasure than to witness the progression of the Society. With respect to himself, he (Dr. Hastings) would always endeavour to discharge the duties of the Association as well as he was capable; but they were well aware that, being engaged in an active professional life, there were necessarily times in which he could not perhaps pay so much attention to the interests of the Association as he could wish; and, therefore, if any member at any time witnessed inattention in him, he hoped he would put it down, not to any lack of interest in the Society's welfare, but to unavoidable circumstances, and the pressure of professional duties. Interested as he had been in the birth and growth of the institution, it would

be a day productive of great regret to him in which he should be separated from its active operations; notwithstanding this, he felt that the time must come when he would be compelled to resign his charge into abler hands, who would carry out more successfully the great interests of that body.

Mr. Blackburn, of Liverpool, moved the next resolution—

That the thanks of this meeting be given to the Council for the past year, and that they be requested to continue their services, with the following additional members, and that they be empowered to add to their number:—Mr. Gutch, Swansea; Mr. Braithwaite, Hereford; Dr. Llewellyn Jones, Chester; Mr. Burman, Henley-in-Arden; Mr. Hudson, Wells; Dr. Bushnan, Castle Cary; Mr. Toogood, Bridgwater; Mr. Jeston, Henley-on-Thames; Mr. Lingen, Hereford; Mr. E. Williams, Bala, Merionethshire; Mr. Rice Wynne, Shrewsbury; Mr. Edward Edwards, Coalbrookdale; Mr. J. B. Estlin, Bristol; Mr. E. Wallis, Hull; Mr. J. C. Swayne, Bristol; Mr. H. Keate, Shrewsbury; Mr. R. L. Williams, Denbigh; Mr. Morrison, Newcastle-upon-Tyne; Dr. Steed, Southampton; Dr. Down, Southampton; Dr. Oake, Southampton; Dr. Hennen, Southampton; Mr. W. Bullar, Southampton; Mr. Clark, Southampton; Mr. Corfe, Southampton; Mr. George, Southampton; Mr. Warwick, Southampton; Dr. Mc Carogher, Chichester; Mr. J. P. Gruggen, Chichester; Dr. Fowler, Salisbury; Mr. Sampson, Salisbury; Mr. Coates, Salisbury; Mr. Winzar, Salisbury; Dr. Quarrier, Portsmouth; Dr. Engledue, Portsmouth;

Mr. Salter, Poole; Mr. Newnham, Farnham; Mr. Bunny, Newbury; Dr. Ashton, Stockport; Mr. J. P. Lyde, Hay; Dr. B. Davis, Birmingham; Mr. Ryland, Birmingham.

He rejoiced in expressing his cordial approval of the general views of the Society. With respect to the desirability of the proposed medical reform, only one opinion was entertained; but the mode or plan to be adopted in furtherance of that object, was not so easily determined. The profession ought to be cautious, and to avoid all appearance of selfishness. He desired to see the services of their body rendered valuable to the public, for that was the only way in which they could maintain their weight, usefulness, and respectability.

Dr. Maunsell, of the *Dublin Medical Press*, spoke to the same purport in seconding the resolution.

REPORT OF THE COMMITTEE APPOINTED TO WATCH OVER THE INTERESTS OF THE PROFESSION.

Dr. Barlow now read the Report of the Committee appointed in 1837 to watch over the interests of the profession, as follows:—

At the anniversary meeting of the Association, held in Cheltenham, in 1837, a Committee was appointed "to watch over the interests of the profession at large," the duty especially assigned to its members being "to suggest to the Council, from time to time, such measures as may appear to them necessary to meet circumstances as they arise."

The terms of appointment shew that no direct obligation was imposed on this Committee to report

its proceedings to the general meeting, its express duty being to offer suggestions to the Council. Nevertheless, as such appointment generally implies an obligation to report, your Committee deem it a proper respect on their part to submit to the Association the views which they take of the important trust confided to them.

In the first place, being deputed "to watch over the interests of the profession at large," they considered that their attention was to be directed to the fundamental interests which involve the well-being of all ranks of the profession, rather than to any of a subordinate nature, or to causes of complaint affecting particular departments only; and they adopted this view the more readily from the conviction which they entertain, that until the whole profession be organised on sound principles, and founded on a stable basis, no department of it can be well or effectively governed.

While your Committee, however, have cordially concurred in the expediency of their own appointment, and have earnestly desired to fulfil, to the best of their ability, the trust reposed in them, the circumstances under which they entered on their duties have hitherto restrained all active discharge of them, the suitableness of any interference on their part being dependent on measures beyond their control, and the issue of which it was incumbent on them to await.

It must be in the recollection of all the members that the claims of the profession for an investigation of its manifold evils and imperfections were recognized by Parliament in 1834, and that on the 11th

of March in that year a Committee of the House of Commons was appointed "to enquire into and consider the laws, regulations, and usages regarding the education and practice of the various branches of the medical profession in the United Kingdom." This Committee commenced its labours on the 13th of March, and pursued its scrutiny minutely and diligently for several months. On the 13th of August a resolution of the House of Commons ordered "That the Committee have the power to report the minutes of the evidence taken before them, together with their observations thereon." In compliance with this order three successive volumes of the minutes of the evidence were laid before the House and printed, containing, respectively, the evidence relating to the London College of Physicians, the London College of Surgeons, and the Apothecaries' Company. Further evidences to at least an equal extent were obtained from the provincial medical faculty of England, from the Universities, and from the respective medical professions both of Scotland and Ireland. But these, though anxiously desired and expected by the profession, and by all the friends of rational reform, have never yet appeared. Why their publication has been so long delayed your Committee have been unable to ascertain. It was a probable cause of delay that the fire which consumed the Houses of Parliament in October, 1834, might have so damaged the records of the Committee of Medical Enquiry as to create a difficulty in continuing to publish uninterruptedly the further minutes. But this cause has never, so far as your Committee are

aware, been pleaded; and they are, consequently, still ignorant why the remaining evidences have been withheld.

Your Committee, at the time of their appointment, confidently expected, not only that the remaining evidences of the Parliamentary Committee would speedily appear, but that, agreeably to the resolution of the House of Commons, this Committee would lay before the House a report of their observations on the minutes; and your Committee were at the time further led to believe that on the basis of this Report, bills would be framed and introduced into Parliament for giving to the collective profession that political organization which both its own interest and those of the community at large imperatively demand. Awaiting this Report, and the announcement of the legislative measures which there was every reason to believe would be founded on it, your Committee felt that until the Parliamentary Committee should comply with the order of the House of Commons, by producing the whole of the evidences taken before them, and furnishing this Report, there was no likelihood of your Committee being able to promote the interests of the profession by any suggestions which they could offer to the Council; on which account they suffered the general meeting of last year to pass over without submitting to the Association any report of their views or intentions. Nearly five years having elapsed however since the Parliamentary Committee closed its investigations, your Committee have at length relinquished all expectation that either the unpublished minutes or a Report will be forth-

coming, and they consequently deemed it their duty to institute enquiries as to whether any other course of proceeding than that which they had so long contemplated, as the most appropriate and most feasible, could be resorted to for accomplishing and expediting the reforms of the profession so greatly needed; and they have great satisfaction in announcing that a way has opened for effecting the desired ends, far more favourable than they could have expected or hoped.

There are two modes by which, speculatively, an effective reform of the profession might be attempted; either by first organizing the profession so as to determine specially its classes and gradations, and then, in conformity with the system thus established, devising suitable qualifications for whatever departments the collective profession should comprise, leaving the special qualifications of each branch to be regulated by the government under which it should be more immediately placed; or by beginning with qualification, and by founding on it the gradations which should be recognized in a well-regulated profession. The first mode would have been that pursued if the Parliamentary Committee had completed their enquiry so far as to furnish a Report, and had then introduced bills into Parliament for effecting the reforms which their Report should recommend. Attentive and mature consideration, however, has satisfied your Committee that the second mode is far preferable, attaining its ends with much more ease, and far greater effect; and your Committee rejoice to add that the opportunity of promptly following out this second course

is now happily furnished in a way which your Committee could not have anticipated, and through an instrumentality the creation of which they cannot but deem a most auspicious coincidence.

The foundation of the University of London must be well known to all the members. It being the province of this University to grant degrees in the faculties of law and of medicine, as well as in arts, one of its earliest measures was to determine the curricula of studies which should qualify candidates for obtaining the respective degrees; and in doing so the Senate of the University proceeded in the most direct and judicious way, appointing a Committee of each faculty to devise the most suitable course of studies for each. The Committee of the faculty of medicine, after diligent and laborious consideration, sketched a Report which, in the first instance, they circulated widely among teachers and practitioners, in order to elicit the various opinions and criticisms which the document was calculated to call forth.

Having thus collected numerous opinions and comments, the Committee next circulated these, with a view to their being still more maturely considered. No more suitable mode could well be devised for bringing every topic involved under general and searching scrutiny. Having digested the several replies, the Committee next proceeded to modify their original sketch; but ere they submitted to the Senate their amended Report, this was once more laid before the several medical schools of England, Scotland, and Ireland. The Senate then proceeded to revise, with great care,

the Report of the Medical Committees; and the "Regulations" of the Senate, founded on this Report, are now in the possession of every medical school in the kingdom.

Your Committee must here solicit the attention of the members to some considerations connected with these regulations, which a cursory inspection of them might fail to suggest. To a casual observer, or on a transient examination, the "Regulations" of the University of London might appear, in the course of studies prescribed, to serve no other end than to create a new species of medical practitioners, and thus merely to introduce one more variety into a body in which discrepancy and inequality of qualification have long constituted a prominent evil. Were no other end contemplated, the course of studies thus enjoined, however perfect or superior to existing usages, would be utterly valueless, adding to the prevailing confusion, instead of superseding or diminishing it. But the views of the framers of the Medical Report were far from being so limited or misdirected. Impressed with the great and manifold evils which result from the present complicated and incongruous state of the profession, it appears to have been their design so to frame their Report that it should serve as a foundation for the legislative enactments necessary for establishing uniformity of qualification throughout the kingdom. In providing an improved qualification for the individual practitioner, they prepare the way for the still higher object of insuring perfect competency in the entire body, and in every department; and, with a singular felicity, the scheme of

reform typified in the "Regulations" of the University not only provides full security for every member introduced into the profession being competently qualified, but it consolidates the whole profession, restoring its natural unity, without disarranging those distinctions in practice which time and the natural tendencies of the profession have insensibly created.

In this view the Committee of the Medical Faculty, deputed by the Senate of the University of London, have been acting, not merely as projectors of a curriculum of studies, but as profound and effective reformists of the whole profession. According to their plan, the Bachelors of Medicine would be the general practitioners of the kingdom, qualified by their education to practise every branch of the art. The bachelors, who should look only to obtaining a legal qualification to practise with public attestation of their competency, would be content so to remain, while the more ambitious would advance to the degree of doctor. The signal excellencies of this scheme become manifested in proportion as it is scrutinised and followed out into its practical operations. In the first place there would be the great advantage of every member entering the profession being fully attested, both as to his general and professional acquirements, and thus the best security would be afforded for the profession continuing to maintain the eminence, literary, scientific, and moral, so long accorded to it. Secondly, to every member the way would be open for reaching the highest distinction, according as talents or inclination might prompt. The more advanced distinction being given not in lieu of the primary, but

in addition to it, each class would understand its own position, and no unseemly rivalry could be engendered. If a feeling of honest pride or other motive should at any time incline a bachelor to become a doctor, it would be always in his power, by a slight effort, so to do. Thus the system would realise what has ever proved the most powerful incentive to human endeavour—a career opened to talent; and every individual in the profession would have free scope to elevate himself to any height which his talents and industry could enable him to attain. A further advantage of such a system is that all the members so entering the profession, being on their introduction fully and equally proved as to their competency, all pretext for subjecting them to further ordeals would be removed, and individuals would be free to practise wherever their own inclinations might determine. Such improvements in the profession would realise all that the most sanguine could desire.

Such being, in the opinion of the Committee, the excellencies of the plan of reform indicated in the "Regulations" of the University of London, your Committee confidently and earnestly recommend it to the approval and support of the Association. Should their views meet the concurrence of the members, they would propose that the following petition be presented to both Houses of Parliament.

"*To the Right Honourable the Lords and Commons, &c.*

"That this petition emanates from a body of medical practitioners, comprising nearly twelve hundred members, and entitled the Provincial Medical and Surgical Association.

"That the members being derived from every county in England, and the Association open to all regular medical practitioners who desire admission, it may be considered as representing the provincial medical faculty of this portion of the United Kingdom.

"That your petitioners naturally feel a deep interest in the welfare and respectability of the profession to which they belong, and have long deplored the manifold evils to which it has been subjected by the want of a suitable political organization, such as should both insure the professional competency of all who enter it, and give full legal protection to all who bring to it the ordained qualifications.

"That your petitioners hailed with peculiar satisfaction and gratitude the disposition manifested by Parliament in 1834, to take this important subject into consideration, and rejoiced in the appointment by the House of Commons of a Committee to enquire into the general state of the profession, assured that due enquiry alone was needed to demonstrate the necessity of legislative intervention.

"That your petitioners marked with high approval the diligent scrutiny so ably conducted by this Committee, and have anxiously awaited the publication of the minutes of the evidence taken before it. But five years have elapsed since the Committee completed its enquiries without the whole minutes of evidence being yet published, or any Report of the Committee presented, your petitioners feel that they should fail in the duty which they owe to their profession if they longer delayed appealing to the legislature in its behalf.

"It was contemplated by your petitioners to solicit the House of Commons for enforcement of their resolution of the 13th of August, 1834, which called on the Committee of Medical Enquiry for the minutes and Report. But circumstances have occurred which render your petitioners less anxious respecting the proceedings of this Committee, it appearing to your petitioners that the objects sought by that enquiry may be attained through other more direct and effectual means.

"The Senate of the University of London having, in the fulfilment of its duties, devised and adopted, as qualification for obtaining its medical degree, a course of studies, general as well as professional, suitable for all who engage in the practice of the art, has, in this simple procedure, laid the foundation of a plan of medical reform which, if completed in the way indicated, would, in the opinion of your petitioners, confer incalculable benefits on the whole profession, removing from it much of the evils which have hitherto oppressed it, and furnishing a simple and effectual correction of a large portion of the errors and defects of which your petitioners have so long had cause to complain.

"Your petitioners beg leave to represent that the main requisite and only stable foundation for any sound system of medical polity, is to establish an adequate and uniform education for the whole profession, so that all who enter it shall pass through the same course of preliminary and medical instruction, be tested by the same examinations, and, when approved, entitled to the same privileges. The natural unity of the profession imperatively demands

this consolidation, there being no more preposterous or mischievous anomaly than that presented by the existing state of the medical institutions of this kingdom, where practitioners of physic issue from no less than sixteen separate sources, differing from each other in the course of education enjoined, the qualifications required, the examinations by which the qualifications are tested, and the privileges conferred.

"In order to secure uniformity in the medical profession throughout the kingdom, it is the clear conviction of your petitioners that there should be established, both in Edinburgh and Dublin, an examining and licensing body, formed on the same liberal principles as the University of London, and pursuing their ends by the same means. The qualifications of individual practitioners would thus be assimilated, and, there being equality of qualification, the same rights and privileges might be extended to all. Your petitioners would here remark, that the system thus recommended would in no way disturb the existing distinctions of grade in the profession which time and circumstances have introduced, and from which many advantages are derived.

"Finally, your petitioners, confident that the time is arrived when the intervention of Parliament is imperatively called for to give to the medical profession a sound legal constitution, and deeply impressed with the conviction that an adequate and uniform education, with community of rights and privileges, constitutes the only sure basis on which to found such constitution, humbly beg that the

necessary legislative enactments may be passed for establishing in each of the three divisions of the kingdom one superintending body, founded on the same principles, and governed by similar regulations, through whose examination, and by whose license alone, shall admission to the profession be in future attained.

"And your Petitioners, &c.

Dr. Black, of Manchester, moved, and Dr. Brandreth, of Liverpool, seconded—

That the thanks of the meeting be given to the Committee appointed to watch over the interests of the profession, for their able Report, and that it be received and printed.

Mr. Norman, of Bath, moved—

That the petition now read be adopted and presented to both Houses of Parliament.

This resolve was the first step towards obtaining that reform which was proved to be so necessary. What was the precise nature of the contemplated reform it would perhaps be difficult to say; but it embraced subjects, the importance of which the Legislature ought to be fully aware of; he was sorry, however, to say that this did not appear to be the case. He hoped, notwithstanding, that when the means to be pursued were pointed out to the Government, the matter would be taken up by them, and that they would guarantee the necessary medical care of the poor, rather than leave it to parochial authorities, or to persons who might be guided by narrow-minded motives.

Dr. Symonds, of Bristol, seconded the motion.

Some considerable discussion ensued respecting the petition recommended in the resolution; many members thinking that it involved too important proceedings to allow of its being agreed to without much investigation, and that it should therefore be printed that evening for circulation amongst the members.

Mr. Oswald hoped that the provisions of any contemplated legislative enactment would be extended to the Isle of Man. He had practised there for twenty-seven years, but the profession was not a legalized body in that island, every man who fancied himself sufficiently capable being allowed to practice upon his own merits.

Objections were made to the allusions contained in the petition with reference to the London University, some of the members hoping that the Society would not petition the Legislature for a recognition of the same plan of study as that adopted in that establishment, which was considered of too high a nature to be carried into effect in country places.

Dr. Barlow explained that they did not contemplate any such thing: their object was to avail themselves of what had been done by the London University in pointing out the kind of study to be established for their future purposes. All they asked for was the consolidation of the profession in all parts of the kingdom; but the qualification of students could be dependent on circumstances; they could make it as high or as low as they wished; the petition did not ask for any specific qualification, and therefore they were not pledging themselves to

any plan of the London University. One point was necessary to be established, upon which the profession should all agree, so as to bring the matter before Parliament. Medical reform was allowed on all hands to be necessary; but this must of course be based upon the qualifications of practitioners, if the profession were to be rendered more respectable and efficient. Perhaps the plan of the London University was not so objectionable as some supposed; but as he had before stated, the petition did not pledge them to its adoption. All they asked was, that instead of having sixteen modes of entering the profession, only one should be adopted; and that when an entrance was effected, the students should all stand upon an equality. There would be ample opportunity for future consideration as to the mode of filling up the details of the measure; but it was necessary in the mean time, and as they only met once in twelve months, to come to some agreement as to the necessity of petitioning Parliament for a reform of the profession, without at present asking for any particular powers to carry that reform out.

Dr. Cowan was of opinion that any petition which involved so momentous a question should emanate from the united voice of the profession generally, and not from an isolated body. A select Committee should be appointed and empowered to communicate with the profession all over the kingdom, so as to establish a unity of purpose; otherwise the petitions emanating from the various bodies of the profession might vary so much in their prayers as to be unattended to or entirely rejected by the Legislature.

Dr. Maunsell agreed that they were not at present prepared to determine upon a detailed plan of reform; but as delay would be detrimental, it would be well to take the initiative step of praying Parliament at once for a reform, and for a uniform mode of licensing individuals to practice. It being so late in the Session, Government could not of course be expected to take active measures before their rising; but the petition could be presented, and the interval before the next Session could be employed in ascertaining the general impression of the profession upon the subject, thereby enabling them to open the campaign with advantage, and to ask for specific measures with every certainty of success.

Mr. Norman thought it would be necessary to state to Parliament a few strong reasons, pointing out the necessity for its sanction to the proposed reform, and that one school for admission to the profession would be desirable.

Mr. Carmichael said a sufficient reason for the step was exhibited in the fact that sixteen or seventeen corporations were vying with each other in underselling their honours, like a Dutch auction, at the lowest price, and with as little regard to the sacrifice of decency as possible promiscuously to all who required them.

Dr. Barlow could not comprehend how the sentiments of the three kingdoms could be collected, if they were not considered as collected and represented there that day. At all events this institution represented the provincial faculty of Great Britain; the general concurrence of the British Medical

Association and of the Dublin Congress were expressed; the first body by a deputation of two gentlemen, and the latter by a deputation of six. If this were not enough to authorise them to proceed, he was quite at a loss to know at what time they would consider it necessary.

After a lengthened but rather irrelevant discussion,

Dr. Johnson proposed an amendment—

That a petition be presented to Parliament, praying for a uniform plan of medical education, for a uniformity of privileges to practitioners, and for the adoption of a single plan for Great Britain and Ireland.

Mr. Barrett seconded the amendment.

Dr. Forbes and other gentlemen agreed with the first and last parts of the petition, that a board should be established in the capitals of the three kingdoms, for the purpose of admitting practitioners, and also that a uniform plan of education should be adopted; and it was eventually agreed upon to expunge the part of the petition containing the clauses relating to the London University; Dr. Barlow undertaking to do so, and to submit it in the evening for the approval of the meeting.

The meeting then separated, at a quarter to six.

EVENING MEETING.

At eight o'clock in the same evening the members again assembled, when Mr. James, of Exeter, read a Report on the Progress of Surgery since 1836.

Mr. Soden, of Bath, in moving—

That the thanks of the meeting be given to Mr. James, of Exeter, for his very interesting Report on Surgery, and that the same be printed in the eighth volume of the *Transactions*:—observed that the great expectations which had been formed respecting that Report, on account of Mr. James's well-known and great abilities, had been more than realized. In fact they could not but be astonished at the exceedingly excellent manner in which that Report had been drawn up. The author had blended interesting with valuable facts, which had left an impression upon their minds that he would not attempt to remove by any further observations of his.

Dr. O'Beirne, of Dublin, seconded the motion with great impressions of respect for the talented author of the Report, in which ability, research, judgment, and impartiality, were so eminently conspicuous. The speaker bore further testimony to the literary ability of Mr. James, and concluded by drawing his attention to some cases of strangulated hernia which had been mentioned by Mr. James in his Report. Dr. O'Beirne observed that although the cases in this disease generally proved fatal, they were perhaps not quite so dangerous as Mr. James had represented. A communication would appear from him (Dr. O'Beirne) in the next week's *Lancet*, tending to prove that fourteen deaths out of twenty-one cases were the average, instead of sixteen to twenty-one, as stated by Mr. James.

Mr. James acknowledged the compliment which had been paid him for an effort which he felt confident was too little deserving of it.

MEMORIAL TO THE COLLEGE OF SURGEONS.

A motion (of which due notice had been given by Dr. Symonds, of Bristol,) was brought forward, on the recent law of the Royal College of Surgeons, of London, respecting hospital attendance in the large provincial towns, by which regulation it would seem that the advantages of these institutions as schools of practical surgery are not appreciated as they ought to be by the Council of the College.

Mr. Turner, of Manchester, in moving the resolution which he held in his hand, took occasion to complain of the establishment of such a rule by the College of Surgeons. He considered that it was not just or liberal in its design and operation, as it had a tendency to cast reflections on the physicians and surgeons of provincial hospitals, as being incompetent to perform their duties, and was tantamount to an assertion that a good medical education was not accessible to students in the provincial towns of Manchester, Liverpool, Birmingham, Leeds, &c. More than twelve months ago he (Mr. Turner) was appointed by the Council of the Association to prepare a Report on the state of the provincial medical schools; he would say, in reference to that Report and its importance, that most gentlemen present were aware of the necessity of some changes in the mode of educating young gentlemen for the medical profession, to enable that profession, which had hitherto stood above mediocrity, to proceed in intellectual attainment, *pari passu*, with that of the people, and to maintain that position in society which they, as professional men, were entitled to

occupy. This necessity was rendered evident from our observing that all classes of society had made very rapid progress in their education. From the establishment of Lyceums and other institutions formed for popular instruction, the mechanic was no longer an automaton at his work ; he acted on scientific principles, and had overtaken in many respects his superiors in the scale of society. The profession must therefore continue, too, to progress in knowledge ; and this necessity justified the attempt which they had been making, and in which they now wished the Association to join them, namely, to improve the state of medical education in the provinces. It was quite evident that a regular system of instruction became necessary, in order to afford to pupils advantages of which they were formerly deprived, and to prevent the first four or five years of their apprenticeship from being passed away without profit or advantage; the outset of their career being the most valuable portion of their professional lives. He (Mr. Turner) had said enough to show the necessity of forming educational establishments in the provincial towns, and these had been formed in a most efficient way. He was aware that there were enemies to the provincial schools. Some masters—but only a few he hoped—objected to them, because they wished their apprentices to devote their time exclusively to the dispensing of medicines in preference to attending lectures, thus preventing their students from availing themselves of the many means of improvement which these schools are capable of affording. Others feared that the establishment of these schools had tended

to lessen the dignified and scientific character of the profession; but how was dignity to be attained by any member of the profession, but by a sound preliminary knowledge of medical science, which would lead to soundness of practice? The argument, that the cheapness of the provincial system would be the means of admitting persons of an inferior grade into the profession, could not be supported; if dignity and science were to be purchased with money, he could tell them that neither Scotland nor the Continent would contain, upon that principle, one dignified or scientific professional man; but they knew the contrary to be the case. The argument, therefore, was not valid. He could prove that an attendance upon provincial lectures and hospitals cost the pupils of the country schools as much, nay more than the expense of attending the same in some of the London and Scotch schools. If dignity was purchaseable with money, medical dignity would cost but little, not amounting to more than the premium required by many mechanics as an apprentice fee. The dignity of the profession, therefore, would not be sacrificed by an attendance upon provincial hospitals any more than upon their lectures. With respect to the scientific character necessary, indispensably so, to be attained, he was prepared to state that, by a Report of the College of Surgeons for 1823, it appeared that out of three hundred and twenty-five students who were examined there were thirty rejected, averaging one in ten; whereas in 1833, out of four hundred and eighty-nine examined, thirty-four were rejected, averaging about one in fifteen. The former period

(1823) was a time when regularly organized schools, in which all the branches of medical science were taught, did not exist in the provinces, although efficient anatomical lectures had been delivered for many years; the latter when provincial schools were in full operation. This fact spoke well for the increase of scientific and practical attainments of medical students, especially when they considered the greater difficulties to be surmounted by extended *curricula* and stricter examination. The demand for knowledge required rather an increase than diminution in the number of provincial institutions. This would be rendered apparent if they referred to the return of the Apothecaries' Company, as they would then find reason to deplore the great paucity of attendance on medical lectures, since it showed that out of about two thousand pupils in the profession, not more than one in four attended lectures during his apprenticeship; consequently a great number of students passed their apprenticeship in lamentable deficiency of the elementary means of professional knowledge. With respect to the obnoxious law of the College of Surgeons, he would observe that, although he entertained the highest respect for that body, he was bound in truth to say that it was not just in them to place a barrier to the success of provincial schools, by demanding a longer attendance upon provincial hospitals than upon those in the metropolis, as qualifying for their diploma. Mr. Turner concluded by moving that a memorial be presented to the College of Surgeons, embodying the views of the Association.

Mr. Smith, of Leeds, seconded the resolution.

A warm discussion now took place between Dr. Bryce, Mr. Turner, and other gentlemen, the former asserting that an unfounded imputation had been thrown upon the medical profession of Scotland by Mr. Turner, and he would ask that gentleman if the Scotch medical education was not far superior to that received at the English provincial schools in connexion with hospitals, inasmuch as the best clinical lectures (the foundation, as it were, of the science) were delivered to the Scotch pupils, but denied to those of the English provinces. Before, therefore, he gave his consent to the resolution under consideration, he would ask Mr. Turner to append to it a clause calling upon the profession to institute clinical lectures in their hospitals, both in Liverpool and elsewhere.

Dr. Banning, Mr. Dawson, and Dr. Scott, defended the plan of education adopted in the Liverpool hospitals: every information was afforded to the students, and Mr. Dawson had himself delivered to them clinical instructions.

After considerable discussion the resolution was carried by a great majority.

NEXT YEAR'S PLACE OF MEETING.

Dr. Gregory, of London, laid before the meeting the decision of the Council with respect to the next place of meeting, and bore testimony to the eligibility of Southampton, and to the talents of the President-elect, Dr. Steed.

Mr. Bickersteth seconded the resolution, which was agreed to.

Dr. Kay, of Clifton, proposed, seconded by Mr. Crang, of Timsbury—

That Dr. Forbes, of Chichester, be requested to deliver the Retrospective Address at the anniversary meeting of 1840.

Mr. Cartwright, of Torquay, moved, and Dr. Scott, of Liverpool, seconded—

That Mr. Dodd, of Chichester, be requested to draw up a Report upon the Progress of Surgery.

Dr. James Johnstone brought forward the motion which had been introduced by him two years ago—

That any member of the Association wishing to compound for his annual subscription, may do so by paying ten guineas, which amount shall in all cases be invested in public securities, and the interest arising therefrom be appropriated to the general purposes of the Association.

In the first place it would be a great convenience to distant members who had not always an opportunity of forwarding their contributions from year to year. Another advantage was that it would establish a fund, which, when invested, would add to the permanence of the Institution.

Dr. Hastings objected to the motion. He feared that under its operation the Society would be in a less prosperous condition than it now was. If the young members generally acted upon it, in twenty years time they would not have sufficient funds to publish their *Transactions*.

Dr. Johnstone instanced the same plan adopted in the British Association of Science, and the London

Zoological Institution; but it appearing that those instances were not in point, on account of the different circumstances under which they existed, and it being stated that it would be running a risk to the funds of the Association merely for the sake of accommodating a few members, Dr. Johnstone withdrew his motion.

Dr. Webster, of Dulwich, moved—

That the Poor Law Committee be re-appointed to watch the further progress of the subject through Parliament, and to suggest to the Council from time to time such measures as may appear to them to be necessary to meet circumstances as they arise.

He considered this resolution as one of the most important subjects which could be considered by that or any other Association; and he was happy to see that as far as the subject had been carried through, as much success as could be expected had attended their exertions. In addition to what he had stated in the morning respecting the abandonment of the tender system, he would state that the scale of remuneration to medical practitioners under the Poor Law system had been agreed to be increased about one-half by the Commissioners, who had consequently determined on recommending a Parliamentary enactment for that purpose. The sum to be awarded for every individual case of pauper disease which was formerly 3*s.* 3½*d.*, and even in many instances, in large towns, only 1*s.* 9*d.*, would be from 6*s.* 6*d.* to 7*s.* This success was almost entirely owing to the exertions of the Association, and he hoped they would persevere and endeavour

to obtain a proper representation of the profession by means of a Medical Commissioner.

Dr. Maunsell, of Dublin, seconded the motion.

Dr. Barlow then produced the petition which he had undertaken to alter in accordance with the sense of the meeting, by expunging the seventh, ninth, and tenth clauses.

After some conversation, the adoption of the petition was moved by Mr. Norman, of Bath, and seconded by Dr. Symonds, of Bristol, and carried unanimously; but not until Dr. Johnson's amendment had been put to the vote and negatived.

Mr. Martin, of Reigate, moved, and Mr. Ceely, of Aylesbury, seconded—

That Dr. Barlow, Dr. Forbes, Dr. Rumsey, and Mr. Soden, be a Committee, with power to add to their number, to carry into effect the recommendations of the Committee appointed to watch over the interests of the profession; and, with the concurrence of the Council, to adopt any further measures that may appear to be necessary; and that they remain in office until the next anniversary meeting.

The meeting then separated at twelve o'clock.

The following is a minute of the Joint Committee of the Provincial Medical Association, the British Medical Association, and the Medical Association of Ireland; Dr. Barlow in the chair; present, Dr. Rumsey, Mr. Carmichael, Dr. Webster, Dr. Macdonnell, Dr. Jacob, Dr. Forbes, Dr. O'Beirne, and Dr. Maunsell:—

Resolved—That Drs. Barlow, Webster, and Maunsell, be respectively the organs of communication of the different bodies which they represent, and that a free communication be forthwith commenced between those bodies for the purpose of drawing up a plan of general medical reform in the shape of heads of a bill to be considered by the several Committees, and subsequently proposed to the Association.

Resolved—That a communication with the medical profession in Scotland, and with the local Associations in England and Ireland, be opened as soon as possible, and that the members of the Committee shall exert their influence to the same effect.

(Signed) E. Barlow, M.D.

THURSDAY.

SECOND GENERAL MEETING.

At twelve o'clock the members again assembled at the Medical Institution, when several interesting practical cases were produced before the meeting.

Mr. Banner, of Liverpool, related a case of excision of the elbow joint which had been performed in the Northern Hospital. The subject of it was a man who had applied to the hospital with disease of the joint; it had become a question whether the arm should be amputated, or the joint excised, to save the life of the patient; the latter operation was performed, and the result was most satisfactory. He (Mr. Banner) had brought the case forward as an instance of the value of this operation—an

operation which had been so ably and successfully advocated by the late Mr. Henry Park, of Liverpool. (The man on whom the operation had been performed was shown to the Association, and exhibited the power he possessed over the new-made joint; he could raise a chair from the ground, and apply the hand nearly to the mouth.) Mr. Banner observed that the arm, though not available for all its former functions, was certainly a great deal better than no arm at all. A case somewhat similar was related by Mr. Blackburn in the third volume of *Guy's Hospital Reports*. Mr. Banner then related two other cases which had occurred in his practice at the hospital. Before concluding he adverted to the able communication made by Mr. James on the previous evening, and commented on the last volume of *Transactions*, regretting the omission of practical communications, which were apparently withheld for the admission of topography and biography.

Dr. Hastings replied that every communication of a practical nature which had been forwarded to the Secretaries had been inserted in the *Transactions*.

Mr. Read, of London, exhibited his patent syringe, or "stomach pump," for the purpose of restoring suspended animation, and explained its important application to the meeting. The exhibitor was himself operated upon.

Sir James Murray rose and wished to impress upon the meeting that Mr. Read was not the original inventor of that important machine. Sir James produced the original one, invented by himself, and explained its mode of operation; asserting that Mr.

Read had, from reading his account of it, manufactured a less effective and clumsier apparatus, which he now endeavoured to palm upon the public as his own. Sir James next detailed to the meeting a method, invented by himself, of administering magnesia in a fluid form, by making the carbonate soluble, and completely pellucid, in distilled water, and therefore not only not disagreeable to take, but not liable to the subsequent consequences of swallowing the same drug in its usual form of "paste or whitewash." He then proceeded as follows:—"Mr. President and Gentlemen, I have the honour to submit to your consideration this fluid, which is an important improvement in the mode of exhibiting a medicine of daily employment in every nursery and sick room. You are well aware that common and calcined magnesia and its mixtures, such as Gregory's powders, are in the hands of all persons, medical and non-medical, and are mixed up for every age and every ailment. During more than thirty years I have been demonstrating to my medical friends the danger of crude magnesia, and the advantages of administering that remedy in the fluid form. In my work on *Dilution and Temperature*,* you will find this proof of the risk of giving solid magnesia:—

'*Solid Magnesia as an Intestinal Concretion.*—The first case of magnesian concretion on public record occurred to me in 1812. A child became much distressed by tormina and tenesmus, fulness and tenderness of the abdomen, vomiting, colic pains, frequent watery evacuations, spasms, and

* Page 35.

nervous twitchings, with febrile exacerbations. Symptoms resembling those of hydrocephalus began to exhibit themselves ; Mr. M'Cluney, a respectable surgeon of Belfast, was in attendance with me. After the administration of castor oil, rhubarb, and the hydrargyrum cum creta, the child began to pass off large quantities of hard alvine concretions, like peas. Having submitted them to analysis, I found that they consisted of dry magnesia, enveloped in the mucus of the canal. By the continued use of mild aperients, and diluted mineral acids, with a few drops of laudanum, this cause of the disorder was removed. The nurse had mixed magnesia, for a long time, in the child's food. Ten years after this Mr. Brande published the next case on record, where a concretion of magnesia had accumulated, amounting to three pounds, found in the colon after death.'

In order to present to the infant and the delicate a safe and agreeable preparation of magnesia, I spared no expense in procuring engines capable of solidifying carbonic acid gas, in contact with magnesia, so as to hold it dissolved in distilled water, thus rendering available a known principle of nature to new purposes in nature, by new processes of art. You will observe how entirely this soluble product differs from any compound mixture of alkaline and magnesian carbonates, treated of in old dispensatories : such compounds produce two saline solutions in one fluid. During the first years of my progress the bi-carbonated solution of magnesia was weak, and half-pint libations were required. Under the name of magnesia water, certain imita-

tors yet supply these large drinks. Finding this form quite too bulky and cold, and being unfit for children or irritable stomachs, I directed my late brothers to concentrate the solution of magnesia, so as to suit every age and either sex. Having read a paper, detailing this material improvement, at the Royal College of Surgeons in Ireland, their approbation was unanimous, as follows :—

'The President and Meeting at the Royal College of Surgeons, in December, 1838, unanimously approved of Murray's 'Concentrated Solution of Magnesia,' whereby infants, females, and others, can be instantly relieved of acidities, by a teaspoonful or two of this mild antacid, instead of half-pint drinks of cold and bulky magnesia water, as formerly, and instead of caustic and corroding kali, hitherto in use. Two circumstances were regarded as particularly favourable to the general adoption of fluid magnesia. First, that when it meets animal acids, very soluble salts are formed, which pass away in the liquid state, whilst, on the contrary, the combinations of soda and potass crystalize in the cavities, and degenerate into sand or calculi; or, as was shown to the British Association by Dr. Murray, these saline particles occasion nervous irritation, and *tic douloureux* in some, and leprous incrustations in others. Second, that when alkaline treatment is not required, or when aperient or effervescent drinks are more indicated, this preparation is the most eligible, because an acidulated syrup, being separate, may be added to the solution of magnesia in any desirable proportion, so that either the acid or alkaline qualities may be left to prevail

according to age and circumstances, and the option of the prescriber. When taken with a small proportion of acidulated syrup, the solution still contains a sufficient quantity of magnesia to correct such acids as may be met with in the animal economy. The brisk effervescence directly settles the stomach, and thousands of proofs might be adduced to authenticate this remedial property in cases of fever, nausea, or sea sickness.'

Although this concentrated solution has been only a few years known in the field of commerce, yet I have taken great pains to make it known in the field of science. Dr. Hope, at my request, showed it to his class, in 1813, 1814, and 1815. Dr. Duncan gave it a place in the Edinburgh Dispensatory for 1819, and made honourable mention of my name as the inventor. Dr. Cummins, Inspector of Hospitals, gave me strong written recommendations, in 1826; which report I observe pirated by an imitator, now starting in London, in 1839. The lecture given by me at the College of Surgeons, and the recommendations of Drs. James, Johnson, and Duncan, are also mis-appropriated from the original article for which they were intended; but Dr. Johnson is happily alive, and his love of truth and fair dealing will settle whether he praises Dr. Murray's preparation, or lauds any late imitations of it. A clear and candid detail of this improvement was also published by me in the *Literary Journal*, at Newry, in January, 1819, from which I beg leave to quote the conclusion. Dr. M'Donnell, of Belfast, fortunately for his circle, is well, and can confirm the practical importance of the fluid magnesia, and my undoubted

priority of its introduction into medicine, to supplant the solid earth :—

'I have thus far endeavoured to discriminate the diseases and symptoms requiring its use; however innocent, it cannot be supposed to be a remedy for every complaint—to misapply it might, in some cases, occasion disappointment and consequent disrepute. It may therefore be right to recapitulate, that in acidities, bilious or costive habits, gravels arising from sand or calculi, gout caused by deranged functions of the digestive organs, thirst, heat, irritability of the stomach, and head-ache, if it originate from sympathy with that organ, are the cases where its advantages have been distinctly experienced, and where, judging *a priori*, it would be expected to do good. Its use is now established as a corrector of the irritability attending fever or pregnancy, as an agreeable diluent and antacid, and as a mild and permanent aperient, dissolving and removing the contents of the bowels, without stimulating or exciting their muscular coats, like drastic purgatives, which never fail to confirm the constipation they were meant to remove. Through the kindness of Dr. M'Donnell* I procured, about four years ago, a piece of calculus, composed chiefly of uric acid, and dissolved it partially in a glass of the solu-

* 'This respected name I cannot mention without indulging my grateful feelings for the candour, impartiality, and encouragement I invariably experience at his hand. He knows that in 1808–9 I made various experiments on the different acids evolved in the stomach, and that since that time I have been engaged in recommending and preparing the solutions of magnesia and marble: he has on every occasion assisted me with his valuable advice, and vindicated my claim to the introduction of this improvement, several years before any attempt was made at imitating the solution.'

tion, at the temperature of ninety-eight degrees of Fahrenheit's scale. It was this fact which induced me to recommend it in the Belfast papers, in September, 1815, as the best solvent of urinary calculi applied *per injectionem in vesicam urinariam*, since the solutions of potass or soda were found so objectionable for that purpose; because, if sufficiently active, they were productive of irritation, if weak and largely diluted, they were inert and ineffectual. By boiling a teaspoonful of the solution over a lamp or candle, the magnesia is seen to fall in beautiful flakes. (This effect was experimentally illustrated by Sir James.) It is very advantageous that in external exhibition no degree of animal heat is sufficient to decompose the solution, so that what is not neutralized by acids passes through the system. This most valuable property enables it to pass through the circulation without the risk of forming depositions or concretions, a danger to which the common magnesia is liable.

J. MURRAY, M.D.'

Gentlemen, I conclude by expressing a hope that the Provincial Medical Association will be as ready to protect a useful medicine, when its nature and properties are candidly explained, as they would justly be willing to reject and reprobate any concealed or undescribed production. Should any gentleman recommend respectable agents in their respective towns, samples will be given free of expense to afford a fair trial, should any doubt exist; and supplies can be furnished by the Apothecaries Company of Liverpool."

A statement of the case of William Dempster, who died in consequence of having swallowed a table knife (exhibited); a case of monstrosity, by Mr. Wainwright; and many others, were unavoidably put aside on account of the press of other business.

Dr. T. Boisragon announced the publication of his work on osteology, containing lithographic drawings of bones, &c., for the use of students.

RETROSPECTIVE ADDRESS.

Dr. Symonds, of Bristol, then read the Retrospective Address.*

Dr. Bardsley, of Manchester, could appreciate the difficulties of preparing such an Address as the one they had just heard, as he had once the honour of preparing one himself; and he was certain that, from the good materials and the excellent mode of arrangement adopted by Dr. Symonds, its insertion in the eighth volume of the *Transactions* would greatly enhance the character of the Association. He then moved—

That the thanks of the meeting be given to Dr. Symonds, of Bristol, for his learned and eloquent Address, and that the same be printed in the eighth volume of the *Transactions*.

Dr. Brown seconded the motion with unmixed gratification, and pointed out many parts in the Address which could not fail to stamp the author as a philosopher and a good man.

* See page 99.

Dr. Forbes introduced to the meeting Dr. Gibson, a distinguished professor of surgery at Pennsylvania, who had attended that day for the purpose of witnessing the proceedings of the Association. He was formerly a graduate of Edinburgh, and had practiced extensively in America, with a high and most honourable character. He (Dr. Forbes) was happy to say that whatever might be the difference in politics existing between the two countries, there was no bad feeling existing with respect to science. The speaker then paid a compliment to the profession in America, and concluded by proposing Dr. Gibson as an honorary and corresponding member of the Association, which was seconded by Sir James Murray, and carried unanimously.

Dr. Gibson returned thanks. He had come one hundred miles out of his way on purpose to attend that meeting, as he had felt a great desire to see those great provincial physicians and surgeons with whose writings he and his countrymen were so familiar From his opportunities of judging, he believed that there was really more learning among the profession in the provinces than in the metropolis; for in London they were so overwhelmed with business as to find no time to cultivate their studies. The same could be said of France ; and in drawing a comparison between the state of science on the continent and in this country, he decidedly preferred the latter, and, as an American, he could express his opinion with impartiality. In proof of this position, he produced several instances of unsuccessful operation in Paris; but that city lay under a disadvantage when compared with London, on account of the

badly ventilated state of the hospitals, and their situation being in crowded neighbourhoods. With respect to America, she had followed the plans adopted by this country, and had been more successful than France. Dr. Gibson concluded by returning his thanks for the great honour they had done him and his country; and he should not fail to convey to his countrymen a most favourable account of their proceedings.

REPORT OF THE BENEVOLENT COMMITTEE.

Dr. Conolly, of Cheltenham, then read the Report of the Benevolent Fund Committee, as follows:—

The Central Committee of Management of the Benevolent Fund of the Provincial Medical and Surgical Association deeply regret that they are unable to present so favourable a report of the progress of the Benevolent Branch of the Association during the last year as, from their experience of the preceding year, they had cause to anticipate; nevertheless the Committee have to report five cases to which, notwithstanding their very limited means, they have, during the past year, been able to apportion a certain amount of relief. The first case was that of a respectable surgeon who had been in practice at Wells for five years, who, with a wife and four children, were, from unavoidable misfortunes, reduced to deep distress; the case was recommended to the Central Committee by Dr. Macmullen and Mr. Bullen, of Wells, and also by the Bath Local Committee, and the sum of ten pounds was apportioned to their relief. The second

case, recommended by the Worcester Local Council, was that of the widow and children of a highly respectable medical practitioner, left in circumstances of peculiar distress, to whom relief to the amount of twenty pounds was awarded. In the third case, ten pounds was given by the Central Committee, at the recommendation of a highly respectable physician at Stroud, to the widow of a surgeon of that place who had left a family totally unprovided for. The fourth case was that of a surgeon formerly practising at Cheltenham, who, advanced in life, with very small means of subsistence, and a wife and child dependant upon him for support, found himself quite unable to pay up a small arrear of debt for lodgings; for this purpose the Committee advanced him the sum of five pounds. The last case to which the Committee have been able to afford relief, was to a very respectable member of our profession who had met with adverse fortune, and was entirely without occupation; this case was strongly recommended from Gloucester, and to him the Committee awarded the sum of ten pounds. Thus, during the past year, the sum of fifty-five pounds has been disbursed in benevolent aids, whilst the sum of sixty-two pounds ten shillings, available to such purposes, has been received, leaving a portion of the debt of last year still due to the Donation Fund, which the Committee confidently anticipate that the subscriptions received at this meeting will enable them to pay off. The Association will not fail to be struck with the smallness of the sums which the Committee have been able to give, as compared to the urgent nature of the cases seeking relief; and when, in addition to this, they are

told that in several instances the Committee have felt themselves compelled, from the paucity of funds, to decline affording any relief whatever, they must join with the Committee in deploring the apathy that exists with regard to this truly benevolent fund, and the inadequacy of its means to meet the urgent calls for assistance which are made upon it by unfortunate members of our profession. Your Committee will not however despair; they will not believe that there does not exist in our noble profession, and especially among the more fortunate members of it, a high degree of benevolence and philanthropy that will prompt them to give regularly a small annual subscription towards the relief of their less fortunate brethren; and when it is considered how great an amount of good might be effected by this flourishing and rapidly increasing Association, if the small sum of five shillings was contributed by each member, your Committee cannot entertain a doubt that the opportunity will not be neglected, and they confidently anticipate that next year they will have to report a great increase of annual subscriptions, which, by the constitution of the Society, is the only fund applicable to the relief of such cases as are detailed in the Reports of 1838 and 1839. The Donation Fund increases slowly, but steadily; it now amounts to two hundred and forty-three pounds eight shillings, including a donation of twenty pounds from our excellent and respected President, who has thus followed the example hitherto set him by the generality of our Presidents. This fund, as the Association is aware, is to be allowed to accumulate until it amounts to a sum hereafter to be named, when the interest is to

be applied to the granting of small annuities to the widows and families of medical men, or as temporary loans The Committee cannot pass over, without special mention, the generous contribution of Mr. Farr to the Donation Fund of nine pounds three shillings, being the surplus of a sum, after deducting his actual expenses, presented to him by the Association for his exertions in aid of the Poor Law Committee; nor can they omit to notice the sum of six pounds nineteen shillings contributed to the subscription list by the *ladies* of Runcorn and its vicinity—an example of benevolence on the part of the fair sex which it is hoped will be followed in many other towns, as they feel assured that it is only necessary on the part of some influential member of the profession to start the idea in his town or neighbourhood to insure a large amount, contributed perhaps in very small sums by that sex who are ever ready to sympathize with distress, and exert themselves to the utmost to succour it. To our subscription list we have this year the honour and gratification of adding the name of a nobleman, the Earl of Stamford and Warrington, for the annual sum of three pounds; and it cannot be doubted that if the members of our profession would exert themselves individually, other noblemen and gentlemen would be found willing to contribute to the wants of unsuccessful members of a profession to which they are all indebted, and for which all profess and feel the greatest respect. To the pamphlet published by the Association, containing an account of the proceedings at Bath, was appended a list of the contributions to the Benevolent Fund; a note ought to have been added, signifying that those gentlemen

whose names are marked by an asterisk had not paid their subscriptions; the Committee would feel obliged by their doing so at the earliest opportunity; and it would be a great assistance to the Committee if some one gentleman in each town would kindly collect the subscriptions in his neighbourhood once a year, and forward them to the Treasurer, as many members are doubtless anxious to contribute to the fund who do not think it worth while to remit their contributions singly to the Treasurer. Since the last annual meeting, Local Committees have been formed at Shrewsbury and at Wells, and it is much to be desired that the same should be done in every other large town where there are members of the Association. Your Committee cannot conclude this Report without earnestly beseeching the Association not to let so highly useful and honourable a branch of it as the Benevolent Fund languish for want of adequate support, and they confidently appeal to its more wealthy members to contribute to it according to their means, and to those in less fortunate circumstances, for a very small subscription to it, convinced that they will never miss, much less regret, such an appropriation of their abundance to the wants of their unhappy colleagues in an arduous profession, whilst the promotion of such truly charitable and benevolent intentions may perhaps be a humble means of calling down the blessing of Divine Providence upon all the labours and undertakings of this numerous and honourable Association.

J. Baron, M.D., F.R.S., President.
W. Conolly, M D., Treasurer and Secretary.

Statement of the Finances of the Benevolent Fund of the Provincial Medical and Surgical Association, July 25, 1839.

	£.	s.	d.
Amount of donation fund up to July 19, 1838 ...	192	0	0
Donations received since July 19, 1838	51	8	0
	£243	8	0
Amount of subscriptions received up to July 19, 1838.....	129	8	6
Subscriptions received since July 19, 1838.....	62	10	0
	£191	18	6
Disbursements up to July 19, 1838	177	0	0
Disbursements since July 19, 1838, viz.:—..... Benevolent aid..... £55 0s. 0d. Letters and parcels ..... 9s. 10d.	55	9	10
	£232	9	10

Being £40 11*s.* 4*d.* more than the available fund of £191 18*s.* 9*d.*, which £40 11*s.* 4*d.* is due to the Donation Fund.

WILLIAM CONOLLY,
Honorary Secretary and Treasurer.

Moved by Dr. Kendrick, and seconded by Dr. Barlow—

That the Report of the Benevolent Committee be received and printed, and that the best thanks of the Association are due to the Committee for their laudable exertions.

Dr. Cowan then read his

REPORT ON QUACKERY.

It will be recollected by the members of this Association that at the last anniversary meeting it was moved and carried "that the Central Council be

empowered to form a Section to consider the nature, extent, and evils of quackery, and to report on the same at the next annual meeting."

In consequence of this resolution, the following gentlemen were unanimously chosen by the Council at Worcester as a Committee for carrying into execution the wishes of the Association, viz. :—Dr. Cowan, of Reading, chairman; Dr. Macartney, of Dublin; Dr. P. Johnson, of Shrewsbury; and Mr. George May, of Reading.

The great extent and importance of the subject, the difficulty of acquiring extensive and correct statistical information in regard to it, and the present unsettled state of the internal arrangements of the medical profession itself, combined with the natural and almost necessary differences of opinion as to the precise measures which it might be desirable to propose, these and other reasons, unnecessary to allude to, have prevented your Committee from coming forward and presenting you with a formal Report.

They are induced, however, to hope that you will not consider that they have wholly neglected the duties entrusted to their care, and that in the statement which accompanied the account of the proceedings of the last anniversary, (put forth, it is true, upon individual responsibility, but with the sanction and assistance of the members of the Committee generally,) you will admit that some additional information has been obtained.

The *machinery of quackery* was there partially exposed; and the reasons why it should be legally suppressed, with the popular and not unfrequent

professional objections to all legislative interference, were freely canvassed, and, we trust, satisfactorily replied to.

The *interests of Government* in empiricism were also, for the first time, accurately investigated, and it was shown, from unquestionable authority, that the revenue from quackery is less than fifty thousand pounds a year. This fact is not without importance, since one of the most tenable and practical objections urged by the opponents to all active measures, was the great amount of the Government profits. The true statement of the case is however now before you, and it is evident, whatever other obstacles may exist, that the one now alluded to can no longer be regarded as either insuperable or formidable.

The actual state of existing anti-empirical enactments has also been examined; and while it cannot but be admitted that much of the present respectability and standing of the medical profession is to be attributed to the legal penalties and restrictions which have from time to time been enforced against ignorant and unqualified practitioners, (the number of whom, great as it still is, has in consequence been materially diminished,) it is at the same time equally clear that no efforts have yet been made to prevent or even to curtail the irresponsible and indiscriminate circulation of *medicines*; but that by the stamp and patent regulations this glaring abuse is legalised and encouraged, and from the unequalled facilities which now exist for advertising, an injury upon the public health is inflicted, far greater than could ever be the case from the strictly personal though unqualified practice of physic.

The procuring of the abolition of the stamped and patent medicines, at least in their present unrestricted form, should therefore be the great and leading indication of our efforts at the present moment, and your Reporter is convinced that the greatest if not the only serious obstacles to its accomplishment are the inertness and apathy of the medical profession.

That medical men are alone competent to expose the evils of empiricism, and that, as legalised guardians of the public health, they are, *ex officio*, as well as morally, bound to do their utmost for its suppression, are axioms so palpably correct, that they need no arguments for their support; and while we should be justified in coming forward and demanding redress, upon the grounds that our privileges and constitution are grossly infringed, we are still more strongly called upon to exert ourselves for the benefit and protection of those, the conservation of whose health is the very object of our corporate existence.

It is of little importance to determine whether, as a profession, we should gain or lose, in a pecuniary sense, by the suppression of quackery, since the public are naturally and justly but little interested in the amount of our private emoluments; but knowing, as we do, the injurious effects of empiricism upon the national health, it is important, and unquestionably our duty, that we should, irrespective of all personal interests, stand boldly forward and denounce it, while we exert our influence, both in public and private, to check and resist its encroachments.

Our best claims upon public confidence and respect should rest, not upon a timid and cringing

servility to popular prejudices, or upon a morbid selfish sensibility, which dreads collision with existing interests, hostile as we believe these to be to the general welfare, but upon a firm and disinterested insisting upon what we know to be essential to the public good, upon a temperate but decided assertion of our medical authority, and upon a uniform refusal to sacrifice our professional character to public ignorance and caprice.

The anomalous condition in which we are now placed, the indignities to which, as a profession, we have been exposed by the public authorities, the cheap estimation in which we are held, and the open and successful competition which impudence and avarice have so long been able to maintain against us, are mainly to be attributed to the want of a more honourable and independent spirit among ourselves, to the not attaching sufficient weight and importance to the office we hold, to the frequent absence of unity and sincere co-operation in our ranks, and to the too eager pursuit by many of individual benefit at the expense of the body to which they belong. Until we are true to ourselves, we may in vain expect the full harvest of public confidence and esteem, and this precept remains still unfulfilled, so long as we silently submit to the gross encroachments of modern quackery, and while we have no means of expelling from our ranks all those who sacrifice the best interests of their profession at the shrine of a selfish and ignominious cupidity.

Medical reform can only be securely effected by the exertions of medical men, and it is idle to expect

assistance from without, unless we show a willingness to purify and a power to defend ourselves. Instead of vaguely descanting upon our grievances, let us actively unite for their removal, and rest assured there is no reasonable limit to the good which might then be accomplished. The present Association furnishes us with an engine of no ordinary magnitude and influence, and while we hope that the great and leading questions which more directly affect the public welfare and our corporate purification will ever engage its primary and earnest attention, we trust that it will also constitute a permanent *court of honour*, excluding from amongst us all whose conduct is at variance with the higher moral interests of a profession whose dignity and usefulness we are pledged by every honourable feeling to uphold.

The question of medical quackery is at this moment engaging the serious attention of the French Government, and very stringent regulations may be shortly expected. The British Medical Association is also occupied in collecting information upon the subject, in conjunction with a plan of general medical reform. Let us not then withhold our co-operation, but let each member feel himself personally interested in the struggle, and pledged to furnish his mite of information and suggestions to those who may be more particularly entrusted with the labour of revision and arrangement.

It is only by a careful digest of a large aggregate of facts and opinions that satisfactory results can be obtained, and there is no subject more deserving of the combined talent and energies of the Provincial

Medical and Surgical Association, and in the right settling of which so many important interests are involved, than the one to which we are now directing your attention.

For the reasons already alluded to at the commencement of this Report, your Committee have refrained from submitting, for your approval, any definite measures for the suppression of empiricism, being anxious, if possible, first to secure the united co-operation of the members, before differences of opinion are excited by the discussion of secondary details. They may, however, be permitted to remark, that quackery in its actual and grosser manifestations is capable of being as effectively interfered with as abuses of many other descriptions; and though the hope of its utter extinction may justly be regarded as chimerical, no reasonable doubt can be entertained, by those who have considered the facts of the case, that its present daring aspect and alarming prevalence may be most materially modified and controlled by well-directed legislative prohibitions.

To accomplish so desirable a result, it is only necessary for the medical profession of Great Britain zealously and cordially to unite, and by doing so they could not fail to secure the attention and support of Government, as well as to enlist in their favour the common sense and correct feeling of every conscientious and enlightened individual.

We would also beg leave to observe, that reiterated experience too plainly proves that all other means of a less direct or more prospective character must ever prove comparatively inert and unavailing; but

if aided by efficient legislative protection, they would necessarily tend to disabuse the public mind of those prejudices and misconceptions on which the quack so successfully trades.

Among the more important of these accessory measures may be enumerated, popular lectures on empiricism, by which some are convinced and others shamed out of their delusions; also the circulation of tracts, unfolding the iniquities of the system, and demonstrating its irrationality; and, lastly, that more limited but perhaps more effectual exposure of its dangers and inconsistencies, which our daily intercourse with its victims permits, but which we are too apt to neglect, either from morbid sensitiveness, moral cowardice, or the short-sighted prompting of self-interest.

In conclusion, let us resolve no longer to tolerate quacks among ourselves, but by a uniform and unflinching attachment to truth, by unwearied efforts for the acquisition of knowledge and its enlightened application for the removal and alleviation of human suffering, by a constant willingness to acknowledge and eradicate abuses wherever they may exist, let our conduct and bearing, individually and collectively, be such, as at all times to entitle us to the sympathies and support of every upright and intelligent mind.

Dr. Theodore Boisragon moved, and Mr. Oswald, from the Isle of Man, seconded—

That the thanks of the meeting be given to the Section on Quackery for their judicious Report, and that it be adopted and printed, and that the appointment of the Section by the Council continue in force until the next meeting.

VACCINATION REPORT.

Dr. Baron, of Cheltenham, then read the Vaccination Report, which occupied between two and three hours in the delivery.*

The following petition on the subject of vaccination was laid before the meeting and agreed to:—

"*The petition of the President, Council, and Members of the Provincial Medical and Surgical Association, held at Liverpool the 25th day of July*, 1839,—HUMBLY SHEWETH—

"That this Association consists of nearly twelve hundred members, including a great proportion of the physicians and surgeons of eminence, practising in the various cities and towns of England, most of whom, during the whole of their professional lives, have bestowed much of their attention in studying the qualities of human small-pox and cow small-pox.

"That at their last anniversary meeting, held in July, 1838, at Bath, a Section was appointed to enquire specifically into the present state of vaccination.

"That the Section so appointed hath recently presented its Report to the meeting held at Liverpool, containing information of a highly important character, and well deserving the attention of your Honourable House.

"That your petitioners have peculiar satisfaction in stating that the result of their enquiries has thrown much light on the nature of *variolæ vaccinæ*, and that Dr. Jenner's opinion, that it is an affection of a true variolous character, has been demon-

* See page 5.

strated by historical evidence, as well as by direct experiment, human small-pox having been recently communicated to the cow by inoculations, and the result having been the production of a variolo-vaccine lymph, possessing all the properties of the original vaccine disease.

" That this direct confirmation of a great doctrine adds infinite value to the original discovery, by explaining alike the nature and the degree of protection that may be derived from perfect vaccination, which is, in short, to use the language of the discoverer himself, to impregnate the constitution of man with small-pox, in its mildest, instead of its pestilential and fatal form.

" That the diffusion of this truth may be made subservient to the best purposes, and, with the aid and countenance of your Honourable House, be rendered highly instrumental to the preservation of human life.

" That your petitioners have learned, by the concurrent testimony of a very large portion of their members, that cow small-pox, if duly and carefully communicated, has an enduring influence in protecting the constitution ; that while they admit that this protection is not in all cases complete, they have unquestionable proof of its being capable, if generally and properly employed, of mitigating, controlling, and they might almost say of extinguishing small-pox in any district.

" That they have further learned that while vaccination has been imperfectly and insufficiently employed in many places, small-pox has been and continues to be diffused in a manner highly detrimental to the health and safety of the community.

"That before suggesting any measure for the more efficient diffusion of vaccination, they would specially implore your Honourable House to take measures for regulating the practice of small-pox inoculation; and they are induced to urge this prayer of the petition with great earnestness, because they have ascertained that such practice has been abandoned by almost every respectable medical man in the kingdom, from a disinterested conviction that it is uncalled for and dangerous, and ought to be universally superseded by vaccine inoculation.

"That the abandonment of small-pox inoculation by medical gentlemen has led ignorant and illiterate persons to take up the practice, whereby the disease has been widely disseminated throughout the country, and that many deaths have been the consequence.

"That your petitioners humbly beg leave to represent to your Honourable House the extreme necessity of restraining such proceedings; they do not ask for a positive enactment to forbid small-pox inoculation entirely, though they think there are sufficient grounds for so doing; but they pray that it may be enacted that a practice always dangerous and very frequently fatal to the subject of it, as well as to the community at large, shall not be permitted to be followed by any one who has not been duly qualified to exercise the profession of medicine or surgery; that such restriction, in their opinion, would be wise and salutary at all times, but is more especially demanded now, that a mild and efficient substitute may be brought within the reach of every member of the community. To accomplish this latter object your petitioners humbly submit that

certain regulations ought to be adopted. They have ascertained that during recent epidemics a very large proportion of the lower classes, both in towns and among the rural population, have been found totally unprotected; that in one city in the south of England five hundred persons perished from this cause in the course of last year; and that in another place, on the breaking out of small-pox, the whole of the children under nine or ten years of age were exposed to its ravages, which were only checked by prompt and extensive vaccination.

"That these and many similar facts have convinced them that at this time there is no sufficient provision for the vaccination of the poor in this kingdom; that the practice, as offered to the poor at our public institutions in towns, as well as by private individuals, is by no means adequate to the wants of our greatly increasing population.

"That it appears to your petitioners to be the duty of the State to remedy this great evil, by appointing regularly educated vaccinators, with suitable salaries, in districts sufficiently numerous to embrace the whole of the poor population of the country, and who shall offer gratuitous vaccination at stated periods to all within their bounds, keeping accurate registers of their proceedings, and communicating regularly with the national vaccine establishment.

"That under such a system, duly organized and vigilantly executed, your petitioners have the strongest reason for believing that small-pox would be effectually restrained, and soon become almost unknown.

"And your petitioners will ever pray, &c."

Mr. Estlin, of Bristol, in moving a vote of thanks to the author of the Report, observed, no one could more highly appreciate the value of the paper than himself. He thought the Association had ample room for congratulating itself on the credit and honour it would do the Association when published forth to the world, enabling them to reflect a great light upon small-pox and vaccination generally. In fact, the way was now so open as to lead no doubt to future discoveries of great importance. The disease was now proved communicable to the cow, the horse, and perhaps many other animals. He then moved—

That the thanks of the meeting be given to the members forming the Vaccination Section, for the trouble they have taken in arranging the numerous answers to the queries sent out, and for their very able Report, and that the same be printed and its recommendations adopted.

Mr. Watson seconded the motion.

Dr. Conolly moved, and Dr. Robertson seconded—

That the thanks of the meeting be given to the Mayor and Corporation, to the Medical Institution, and to the Liverpool Botanical Society, for the accommodation afforded by them to the Association on this occasion.

Dr. Holme, of Manchester, moved, and Dr. Hastings seconded—

That the thanks of the meeting be given to the learned and worthy President, for his unwearied attention to the members, and for his zealous exertions to promote the prosperity of the Association.

Dr. Jeffreys having acknowledged the kindness of the compliment, the meeting was adjourned.

The following is as full a list as could be obtained of the gentlemen who were in attendance at the meetings of this anniversary; but the names of many of the profession in Liverpool are not inserted:—

Dr. Ashton, Stockport; Mr. James Ainsworth, Manchester; Mr. F. Archer, Liverpool; Mr. Anderton, Woolton; Mr. Addison, Malvern; Mr. Bickersteth, Liverpool; Mr. Batty, Liverpool; Mr. Barnett, Stourport; Mr. Barrett, Welshpool; Mr. J. C. Brickwell, Banbury; Dr. Bryce, Liverpool; Dr. Black, Bolton-le-Moors; Mr. Bainbrigge, Liverpool; Dr. Banning, Liverpool; Mr. W. Banning, Liverpool; Dr. Baird, Liverpool; Mr. Braithwaite, Hereford; Dr. Boisragon, jun., Cheltenham; Mr. P. Brown, Whitchurch; Dr. Baron, Cheltenham; Dr. Browne, Sunderland; Mr. Bythell, St. Asaph; Mr. Bodington, Kenilworth; Mr. G. Bottomly, Croydon; Mr. F. C. Batt, Abergavenny; Mr. John Barrett, Bath; Mr. James Bailey, Blackburn; Mr. Banner, Liverpool; Mr. Bevan, Liverpool; Dr. Brandreth, Liverpool; Dr. Bardsley, Manchester; Dr. Barlow, Bath; Mr. Jas. Brooke, Stockport; Mr. Alderman Brown; Mr. Cauty, Liverpool; Dr. Chaytor, Manchester; Mr. W. Craig, R.N.; Dr. Cohen, Liverpool; Mr. R. Ceely, Aylesbury; Dr. W. Conolly, Cheltenham; Mr. Cenig, Liverpool; Dr. Clayton, Manchester; Mr. Carmichael, Dublin; Mr. Cartwright, Torquay; Mr. Crang, Timsbury; Dr. Cowan, Reading; Dr. Carson, Liverpool; Mr. Churchill, London; Mr. Callan, R.N.; Mr. Clay; Dr. Duncan, Liverpool; Mr. Dugdale, Blackburn; Dr. Davies, Chester; Dr. Dickenson, Liverpool; Dr. T. J. Drury, Shrewsbury; Mr. G. Dagliesh, Wigan; Mr. Dawson, Liverpool; Dr. Edwards, Chester; Mr. Estlin, Bristol; Mr. K. Ellison, Liverpool; Mr. Forshaw, Liverpool; Dr. Fergusson, Liverpool; Mr. Flint, Stockport; Mr. T. Fowler, Chilcompton; Dr. Forbes, Chichester; Mr. Gillon, Liverpool; Mr. Grainger, London; Mr. Greatrex, Liverpool; Mr. Goodlad, Manchester; Mr. T. B. Garrett, Welshpool; Dr. Godfrey, Liverpool; Dr. Gregory, London; Professor Gibson, Pennsylvania; Mr.

Garthside, Liverpool; Dr. Halliday, Seacombe, near Liverpool; Mr. Hamilton, Liverpool; Dr. Harland, Salford; Mr. Harbord, Liverpool; Dr. Heathcote, Rotheram; Dr. Holme, Manchester; Mr. Hennson, Birkenhead; Mr. Hare, Leeds; Mr. T. Hensman, Liverpool; Mr. Hardy, Warrington; Mr. Hebb, Warrington; Dr. Marshall Hall, London; Mr. Hunt, Manchester; Mr. R. J. Hunt, Manchester; Dr. Hastings, Worcester; Dr. Hannay, Liverpool; Mr. Hardman; Mr. Halliday, Seacombe, near Liverpool; Dr. Iliff, Liverpool; Mr. Henry Johnson, Knotty Ash, near Liverpool; Mr. Jackson, Sheffield; Mr. R. H. Jones, Conway; Mr. T. Jones, Ruthin; Mr. Jordan, Manchester; Mr. James, Exeter; Mr. Jubb, Halifax; Mr. Ellis Jones, Liverpool; Dr. Llewelyn Jones, Chester; Dr. Phillips Jones, Chester; Dr. Johnson, Shrewsbury; Dr. J. Johnstone, Birmingham; Dr. Jeffreys, Liverpool; Dr. Jacob, Dublin; Dr. Kirkpatrick, Laone, Ireland; Dr. Kendrick, Warrington; Dr. Kay, Bristol; Mr. Lane; Mr. Lynn, Runcorn; Mr. Alexander Lax, Halton; Mr. Lynas, Liverpool; Mr Lamb, Woolton; Dr. Lyon, Manchester; Mr. Lees; Mr. J. Long; Mr. Latham; Mr. Lewtas, Liverpool; Mr. Marshall, Liverpool; Mr. Moore, Liverpool; Mr. M'Gill; Dr. Maitland; Mr. Martin, Liverpool; Dr. Macintyre, Liverpool; Dr. Macrorie, Liverpool; Mr. M'Culloch, Liverpool; Dr. Malins, Liverpool; Mr. Manifold, Liverpool; Mr. Morrison, Newcastle; Dr. Marshall, Manchester; Sir James Murray, Dublin; Mr. Martin, Reigate; Dr. Martland, Blackburn; Mr. M'Donnell, Dublin; Dr. Maunsell, Dublin; Mr. W. Nisbet, Seacombe, near Liverpool; Mr. Neill, Liverpool; Dr. J. Newbold, Manchester; Mr. D. Noble, Manchester; Mr. Norman, Bath; Mr. Naegell; Dr. Outhwaite, Bradford; Mr. Ortt, Liverpool; Dr. O'Beirne, Dublin; Mr. Oswald, Isle of Man; Mr. Peacock, Chester; Mr. Pearson, Gateacre; Mr. Portland, London; Dr. Petrie, Liverpool; Mr. Price, Leeds; Mr. Peter; Dr. Ramsey, Liverpool; Mr. J. Robinson, Bolton; Dr. Roberts, St. Asaph; Dr. Robinson, Northampton; Dr. Renny, 1st Dragoons, Dublin; Mr. G. Rogerson, Liverpool;

Dr. Rumsey, Amersham; Mr. Robson; Mr. Stevenson, Birkenhead; Mr. J. S. Sharp, Warrington; Mr. Soden, Bath; Dr. Shapter, Exeter; Mr. Smith, Woodside; Dr. Sutherland, Liverpool; Dr. Symonds, Bristol; Dr. Smith, South Carolina; Mr. S. Smith, Leeds; Dr. Scott, Liverpool; Dr. Scotman; Dr. Trotman, Clifton; Mr. Thom, Delph, Saddleworth; Mr. Thurnam, York; Dr. Turner, Stockport; Mr. Turner, Manchester; Mr. Tudor, Bath; Dr. Timmon, Liverpool; Dr. Underwood, Isle of Man; Mr. Vale, Birkenhead; Mr. C. Vaudrey, Breblay; Mr. Wainwright, Liverpool; Mr. Workman, Basingstoke; Mr. Windsor, Manchester; Mr. Weaver, Chester; Mr. J. Woodcock, Bury; Mr. E. Westall, Croydon; Mr. G. Wolstenholme, Bolton; Mr. T. Woodlarra, Woodside; Dr. Williamson, Leeds; Dr. Webster, London; Mr. E. Wallis, Hull; Mr. T. Workman, Warrington; Mr. K. Waston, Stourport; Mr. Wilding, Blackburn; Dr. Watson, Liverpool; Mr. Windsor, Liverpool; Mr. J. Walmsley.

NEW MEMBERS.

A.

Anderton, Charles, Esq., Surgeon, Leigh, near Bolton.
Anwyll, Robert, Esq., Surgeon, Tremadoc.
Archer, F., Esq., Surgeon to the Borough Gaol, Liverpool.

B.

Barrett, J. B., Esq., Surgeon, Welshpool.
Barton, Samuel, Esq., Senior Surgeon to the Eye Institution, Manchester.
Beckingsale, E., Esq., Surgeon, Fovant, Wilts.
Bell, —— Esq., Surgeon, Bristol.
Best, Richard, Esq., Surgeon, Newbury.
Bidwell, Henry, Esq., Surgeon, Wellington, Salop.
Birt, R., Esq., Surgeon, Newbury.
Blundell, J., Esq., Surgeon, St. Helen's, Prescott, near Liverpool.
Brighton, J. G., Esq., Surgeon, Kinver.
Bromilow, Samuel, Esq., Surgeon, Liverpool.
Brown, J. Mavor, Esq., Surgeon, Kineton, Warwickshire.
Bullock, J., Esq., Surgeon, Congleton.

C.

Cauty, —— Esq., Surgeon, Liverpool.
Chadwick, —— M.D., Bury, Lancashire.
Chambers, Richard, M.D., Upton.
Coates, W. M., Esq., Surgeon, Salisbury.
Coates, W., Esq., Surgeon, Salisbury.
Coster, —— M.D., Wells.
Craig, Wm., Esq., Surgeon, Liverpool.
Cripps, Frederick, Esq., Surgeon, Liverpool.
Cross, —— Esq., Surgeon, Clifton.
Cummin, —— M.D., Clifton.

D.

Davies, Thomas, M.D., Physician to the Chester Infimary.
Davis, —— Esq , Surgeon, Nailsea, Somersetshire.
Dewesbury, R. P., Esq., Surgeon, Tring, Herts.
Dicken, Oswald, Esq., Surgeon, near Manchester.
Dillon, Garrett, M.D., Brighton, late Surgeon to the St. Pancras Infirmary, London.
Duke, A., Esq., Surgeon, Chichester.
Duncan, W. H., M.D., Physician to the South Dispensary, and Lecturer on Materia Medica and Medical Jurisprudence, Liverpool.

E.

Edwards, James, M.D., Physician to the Chester Infirmary.
Edwards, John, Esq., Surgeon to the Eye Infirmary, Liverpool.
Eykyn, E. H., Esq., Surgeon, Wellington.

F.

Farbrother, —— M.D., Physician to the Bristol General Hospital, Clifton.
Fereday, Samuel, Esq., Surgeon, Dudley.
Ford, William Carwither, Esq., Surgeon, Kingsbridge, Devon.
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PART I.

ARTICLE I.

REPORT OF THE SECTION

APPOINTED TO ENQUIRE INTO

THE PRESENT STATE OF VACCINATION,

AS READ AT

THE ANNIVERSARY MEETING

OF THE

PROVINCIAL MEDICAL AND SURGICAL ASSOCIATION,

HELD AT LIVERPOOL, JULY 25, 1839,

AND ORDERED TO BE PRINTED FOR GENERAL CIRCULATION.

CHAIRMAN:

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SECRETARIES:

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PRELIMINARY REMARKS.

THE subject committed to our care is one of deep importance to the safety and well-being of the community. We have entered upon it with an earnest and anxious desire to discover truth, and

to lay it before our brethren in the most simple and perspicuous manner. The number and variety of the questions involved in the investigation increased the difficulties of our task; these we have endeavoured to surmount by fixing our attention upon the great and leading features, and thus to find a place where all the subordinate parts might take their station without disorder. The diversified character of our materials, and their intimate relations with each other, rendered this partition and separation both perplexing and laborious. We dare not hope that we have completely realised our own wishes, but our brethren, we trust, will believe that our endeavours have been both diligent and sincere. It will be seen, as we advance, that some of the information about to be communicated, is highly interesting and valuable. It has happily enabled us to carry out the arrangement with greater precision than could otherwise have been attained. This benefit, considerable though it be, is small when compared with the practical results that flow from it.

The first division of the Report embraces those points that have received what we take to be a satisfactory demonstration. The other divisions, all more or less dependent upon it, have been drawn up from authentic documents, and set forth the past and present experience of many of the most respectable professional gentlemen in this country, in a faithful and condensed form; this at least has been our aim. It must, at the same time, be admitted that the testimony has not always accorded. In arriving at conclusions we have been compelled to

weigh and balance evidence; but as the facts which have guided us are fairly stated, our opinions can at once be brought to the test, and of course will avail no more than as they appear to be conformable to the truth. With this admission we desire it to be understood that nothing has been introduced of an hypothetical or speculative nature; nothing has been kept back unfavourable to the cause of vaccination; neither has any thing been withheld that was calculated to produce an impression of a different kind. While arguing either for one side of the question or the other, we have studied to confine ourselves within the limits of a strict impartiality. At the outset we would claim credit for this intention, the nature of the evidence being occasionally of a jarring and contradictory description; to sift and examine that evidence made up no trifling part of our duty. It would have been gratifying had this necessity not existed; but to have shrunk from the difficulties arising out of it, would have rendered the present undertaking equally inconclusive and unsatisfactory. We have endeavoured on the one hand to moderate and regulate public expectation where needful; and on the other to prevent undue apprehensions from damping confidence in a practice that has already been fraught with such wonderous benefit to mankind; and when perfectly understood and carefully followed, we humbly hope may still be permitted greatly to bless our race.

Valuable information, from whatever source derived, has not been overlooked; but we have ever borne in mind that after having accomplished the most important part of our labour, the next was to

confine our enquiries, as much as with propriety could be done, to the present state of vaccination in these kingdoms. To have detailed, even in the briefest manner, the opinions that have been published in other countries, would have swelled this Report to a very needless magnitude. These opinions are also often of a contradictory nature, the experiments by which they are supported are not less so, and we have had no inclination to enter on this disputed ground, because we flatter ourselves that the sources of these contrarities are likely to be removed.

The gentlemen who have favoured us with their returns, may rest assured that they have been most carefully scanned; and though every individual name has not been mentioned, all will perceive how much the value of our Report depends upon their respective communications. We will only add, that from the method of conducting vaccination in Great Britain, accurate registers are not in general kept, and it has therefore not been possible to construct such tables as could have been desired.

Having premised these observations, we shall now state the order in which we mean to arrange the different heads or sections. The first will treat of the affinities between human small-pox and cow small-pox. The second will contain what we deem essential to render vaccination correct, with some observations on the impediments to that practice. We will then proceed to consider the protecting power of vaccination. Our fourth section will comprise remarks on small-pox after small-pox; which will be followed by a brief examination of the

question of re-vaccination. Lastly, we shall enquire into the state of the population generally, both with regard to small-pox and vaccination; the means at present employed for the dissemination of the former, with suggestions for restraining it, and promoting genuine effectual vaccination.

AFFINITIES BETWEEN HUMAN SMALL-POX AND COW SMALL-POX.

In pursuing this investigation, we have especially directed our attention to the nature of the *variolæ vaccinæ*, their origin, their history, their affinities with the *variolæ* of the human species, and the foundation on which confidence may rest as to their prophylactic virtue. This portion of the subject may well occupy the attention of the Association, as upon a due understanding of it, every thing that is valuable in the practice of vaccination depends. Formerly it was supposed to be obscured by difficulties and uncertainties; now we have the satisfaction of being able to say that such difficulties are removed, and that the great problem respecting the nature of the security afforded to man by the communication of the vaccine disease, is solved. We cannot refer to this momentous event without paying a passing tribute to the genius and discrimination of the magnanimous and most distinguished author of vaccination. He called the disease the *Variolæ Vaccinæ*, and good reason he had for this most correct and pregnant designation. Many of his contemporaries derided it, but he wisely adhered to his own views, remarking, with admirable sagacity, that this very appellation contained in it the germs

of a theory which future observations would illustrate and verify. That verification has been obtained; and we deem it of so much importance, that we place it in the most conspicuous part of our Report, well assured that it influences every question that can arise respecting the object of our researches.

Let us, therefore, recur to the idea involved in this designation. It implies that one genus of the inferior animals is liable to a disease of a kindred nature with that which attacks man, the latter, for the most part, being pestilential and fatal; the former often mild, and scarcely pestilential at all. The practice of inoculation had long been in use to diminish the mortality of human *variolæ*, and it had been ascertained, by casual observation, that an affection derived from the cow, protected from subsequent attacks of that disease. This, and other facts, led Dr. Jenner to conclude that the protecting power arose from the impregnation of the constitution with a mild species of small-pox instead of the malignant and virulent sort, which is for the most part propagated from man to man, whether naturally or by inoculation. This idea, which he very early took up, guided him through all his investigations, and led him at last to the great result of his labours, namely, the successful transmission, by inoculation, of the mild and safe affection from the inferior animals, instead of the contagious and malignant disease which for so long a period had devastated mankind. His confidence in this practice arose from his unalterable conviction that these two disorders, how different soever they might be in some particulars, were in reality identical.

These conclusions, resting upon a very wide induction, drawn both from the history of human small-pox, as well as from accurate observation of small-pox among cattle, were published by him in every possible form, as his reasons for recommending the inoculation with *cow small-pox* instead of *human small-pox;* but his doctrines were disregarded and contemned, and the majority, we believe, of the public, as well as of the profession, to this hour imagine that the benefit derivable is not because these diseases are alike in essential properties, but because they are in all respects dissimilar and opposed the one to the other—the disease arising from the cow being imagined to be an antidote, not a safe and effectual substitute for a more malignant form.

Things continued in this state nearly up to the time of his death; and the controversy which sprang from his discovery had very little reference to this fundamental part of his doctrine, but consisted rather in assertions and counter-assertions respecting the alleged virtue of the disease derived from the cow. Some of those who have followed Dr. Jenner, have laboured to bring back the question to its proper basis, and to prove that the opinions which he promulgated were capable of demonstration, both from the medical and literary history of *human small-pox* and *cow small-pox.* The light thrown upon the whole subject by these enquiries respecting the diseases of the inferior animals is very striking and peculiar, and they must be specially brought forward in this place, in order to enable us to complete that chain of evidence which leads us to our great conclusion.

We will begin, therefore, by stating that it has been shown, by unquestionable evidence, that cattle and other animals have for centuries been known to be affected with small-pox or *variola*. This latter appellation has unhesitatingly been given to the disease by every different writer who has seen it; by Doctor Layard, in England; and, long before him, by Fracastorius, Lancisi, Lanzoni, Ramazzini, and others, in Italy. We believe that these facts were unknown to Dr. Jenner; but, be this as it may, they give an authority to the language employed by him, corroborated as it will be by still more explicit evidence.

The disease described by the authors above named, was of a malignant character, and destroyed the cattle almost as extensively as small-pox did the human race. It is not known how often it may have raged in England, but it is certain that it was introduced into this country in 1745, and again in 1770, and appeared among the horned cattle, with more or less violence, so late as 1780. At this time Dr. Jenner was carrying on his investigations; and it was in this very year that Dr. Layard published his second paper in the *Transactions of the Royal Society*, in which, among other things, he mentions that inoculation from cow to cow was successfully practised to mitigate the severity of the disease. This chain of evidence, very briefly and imperfectly stated, leads however to the conclusion that it was the remains of this violent epizootic that Dr. Jenner found in Gloucestershire, and which being occasionally transferred to the milkers, secured them from subsequent small-pox. It is a strong con-

firmation of this, that the mild form of the disease had been mentioned by Vicq d'Azyr as occurring at the same period among the cattle of Picardy. He says that some of them had the neck only covered with pustules (*boutons*), and that when the disease was thus partial, the termination was usually favourable.

We have a curious collateral illustration of the malignant character of this distemper in the speech delivered by his Majesty, George the Third, at the opening of the Parliament on the ninth of January, in the year 1770. "It is with much concern," said the King, "that I find myself obliged to open this Session of Parliament with acquainting you that the distemper among the horned cattle has lately broken out in this kingdom, notwithstanding every precaution that could be used for preventing the infection from foreign parts. Upon the first notice of its actual appearance, my next attention was to endeavour to stop its farther progress; and as the success of those endeavours must in all probability have been entirely defeated by any the least degree of delay in the application of them, I thought it absolutely necessary, with the advice of my Privy Council, to give immediate directions for every step to be taken that appeared most capable of checking the instant danger of the spreading of the infection, until I could have an opportunity of consulting my Parliament upon some more permanent measures for securing us against so great a calamity, and to your immediate and serious consideration I earnestly recommend this very important subject." The answer of the Lords was, as usual, an echo to this

part of the speech; but that of the Commons corroborates a fact which we have ascertained from other sources, namely, the previous existence of the disease in the country, as they express their regret that that alarming distemper had *again* broken out in some parts of the kingdom.

The bitter and sarcastic Junius thought fit to make this calamity the subject of his satire: in his letter to the Duke of Grafton, he says, "while the whole kingdom was agitated with anxious expectation upon one great point, you meanly evaded the question, and instead of the explicit firmness and decision of a king, gave us nothing but the misery of a ruined grazier, and the whining piety of a methodist." He adds in a note, "there was something wonderfully pathetic in the mention of the horned cattle." Could this bold and unfeeling writer have caught the slightest glimpse of the wonderful consequences arising from this disease "of the horned cattle,"—could he have seen, in the most remote degree, its affinity with a like distemper in man, (and history and experience were not silent on this point, even in his day,)—he might have perceived that the sufferings as well as the safety of his fellow creatures were deeply involved in the question. The party politics of the hour might then for a moment have lost their influence, and a nobler sentiment have taken possession of his soul. But notwithstanding the sarcasms of Junius, his Majesty recurred to the subject on the opening of the ensuing session, Tuesday, November the 13th, in the same year. Both Houses of Parliament in their addresses alluded to it, and talked of "the fatal contagion which has of late appeared in some

of the distant parts of Europe." It was not to be expected that our Senators should be accurate medical historians; but we know, from the clearest evidence, that the appearance of this disease had not been of recent date, as we have descriptions of it hundreds of years before.

Whether the great increase of mortality from small-pox which occurred during the latter part of the last century had any thing to do with this epizootic, we cannot tell: the coincidence, nevertheless, deserves notice. From the year 1731 to 1772, the proportion of deaths from small-pox compared with those that arose from all other causes, was as eighty-nine in a thousand; whereas, from 1770 to 1800, they were as ninety-six in a thousand. This increase has been attributed to the general practice of small-pox inoculation during the latter period. Such may have been the case; but still it is true that when the cattle were scourged by the variolous disease, mankind were in like manner great sufferers. One of our correspondents, Mr. Bree, of Stowmarket, makes an incidental remark applicable to this point. "During the prevalence of small-pox in this neighbourhood," he observes, "several dairies became affected with cow-pox; which supports the opinion of the identity of the two diseases, the latter being probably modified by being developed in the cow."

The history of these epizootics shows also that horses as well as cows are liable to this affection. This interesting fact illustrates and explains one of the most difficult and perplexing events in the practice of vaccination. It was known that a disease

from the horse was sometimes communicated to the cow by men employed in dressing the heels of the one, and afterwards milking the other. This disease was supposed to be what is vulgarly called *the grease*, and was imagined by Dr. Jenner, in the outset of his enquiry, to be the origin of small-pox. This idea he lived to correct; but the prejudices it excited, and the erroneous views to which it gave birth, have unhappily been perpetuated. It is ascertained that the horse is liable to a vesicular disease of a variolous nature as well as the cow; and that lymph taken from the horse and inserted into man, will produce an affection in all respects like that derived from the cow, and equally protective. The error consisted in believing that this affection was *the grease*, and that it required to be transmitted through the cow to give it efficacy. A misapprehension of this kind may well be excused in the infancy of so complicated an investigation. The disease appearing for the most part on the thin skin of the heels of the horse, and the traditions among the farriers in the country, leading to the mistake. We now know that the vesicle may appear on other parts of the animal's body; and that the horse as well as the cow has in different ages and in different countries suffered both from the mild and malignant *variolæ*.

These variolous epizootics may be traced in the most authentic medical records for several hundred years, and the connexion between them and pestilences, which have ravaged both man and the inferior animals throughout the ages of the most remote antiquity, may be discerned with much

greater accuracy than at first might be imagined. It is likewise worthy of remark, that the countries where the disease has of late years been found, either on cows or horses, are those where it has formerly been known to have existed among them in its most virulent form. But its ravages are not confined to one region of the earth ; it has been discovered in the valleys of England, on the mountains of the Andes, on the elevated ranges of the Himalayan chain, in the plains of Lombardy, and the green pastures of Holland and Holstein. What it was formerly in the days of Lancisi and Lanzoni in Europe, it is at this moment in Asia.

The cows in Bengal have long been affected with this complaint ; and it is a point not to be overlooked on this occasion, that the natives describe it by the very same terms by which they designate the *variolæ* in the human subject, namely, *bussunt, mhata*, or *gotee*. In August, 1832, Mr. Macpherson found this disease among some cows at Moidapore. The description which he has given so entirely agrees with what is recorded by Fracastorius and the other Italian writers already mentioned, that it is impossible to doubt that they were all delineating one and the same disease. We have farther to observe, that an affection of a precisely similar character has been witnessed in a dairy in Gloucestershire so late as 1825. The veterinary surgeon who saw it described it as an aggravated case of cow-pox, the whole skin from the base of the horn to the end of the tail, and to the hoofs, being covered with the disease. It destroyed the animal, and spread through all the other cows in the dairy, between

forty and fifty in number. Now, all this exactly agrees with the variolous epizootic described by Dr. Layard, in 1780, which he said "bore all the characteristic symptoms, crisis, and event, of the small-pox." We will connect this subject with the experiments conducted by Mr. Macpherson in Bengal, who observed the disease among the cows in its topical, as well as in its more malignant and pestilential form. Thus, he found two small pustules on the teats of one cow. From the crusts obtained from these pustules, he inoculated eleven children. It failed in the majority of instances, but in one it produced the true vaccine disease. Not the least impressive event in this history is yet to be mentioned. In 1837, another series of inoculations was performed with virus from diseased cows; on which occasion an eruptive complaint of the true variolous nature was produced. The same phenomena have been observed in the course of the last year at Gowalpara by Mr. Wood. In several of his cases the symptoms were so severe as to excite apprehension that the disease would terminate fatally. He was so strongly impressed with this fact, that he thought it would be better to take human small-pox rather than cow small-pox for inoculation, when the latter assumes its dangerous and fatal form.

It is thus incontestibly proved, that a severe variolous disease may be communicated from the inferior animals to man, as well as a more mild and benignant affection. The event in either case seems to depend upon the state of the disease in the animal from which the virus is taken; and had inoculations

been performed on man with lymph taken from the cattle as they were afflicted in the middle and latter part of the last century in England, we should probably have witnessed the very same results that have recently taken place in Bengal.

We have already alluded to the simultaneous existence of small-pox among men and the inferior animals in this country, and as this is a peculiarly interesting and important branch of our enquiry, we must endeavour to establish it by a few additional facts. That the pestilence was very fatal, both to the horned cattle and to the human species during a great part of the last century, admits of no dispute. The remark likewise of Mr. Bree, of Stowmarket, that the prevalence of small-pox in his neighbourhood, at the same time that the disease appeared in the dairies of Suffolk, ought to be had in remembrance while we mention that many other parts of England have lately borne witness to the same truth.

During the late epidemic the affection among the cows has certainly been more observed than at any period for many years. In Gloucestershire it has been seen by many persons, and it is from this county, we believe, that Mr. Estlin derived the lymph which he has so assiduously diffused. In Dorsetshire it has been found by Mr Fox, of Cerne Abbas, and within these few weeks by Mr. Sweeting, of Abbotsbury, both of whom have successfully propagated the affection on man. In Buckinghamshire, likewise, it prevailed extensively, and enabled Mr. Ceeley to institute some of the valuable experiments which we shall shortly notice.

We have no doubt at all that had attention been generally directed to this point, much more information might have been obtained. We are happy in being able to supply deficiencies of this kind, by a short reference to facts recently derived from other regions of the earth.

In a General Sketch of the Province of Guzerat, by A. Gibson, Esq., published in the first volume of the *Transactions of the Medical and Physical Society of Bombay*, which has just reached us, is the following passage:—"Variola, or small-pox, carries off annually many persons, particularly in the more remote and unfrequented districts, out of the line of the great roads, or at a distance from large towns. I believe that in the midland country, beginning at Surat and ending at Ahmedabad, in the whole of which range vaccination is thankfully received, and often eagerly sought after, the frequency of variola has been greatly lessened, and the results appear evident in the increase of population. *The same disease is at times very fatal among the cattle;* they become so weak and feverish as to be unable to eat in consequence of the effect of the pustular eruption on the lips, tongue, and throat."

Let us now take another quotation from a letter written by Mr. Macpherson (to whom we have already alluded), dated at Murshidabad, May 1st, 1836:—"The disease is said to make its appearance among the cows here generally about the breaking up of the rains; but no cases, so far as I have been able to ascertain, have occurred for the last two years; and I am happy to add, that very few cases of variola have been known within the

same period. From these circumstances we may infer (as I have remarked in former letters on this subject) that the unknown causes which favour the disease in the human subject, have the same tendency in the cattle; in fact, that *variola and mhata, or gotee, owe their origin to the same cause.*"

This observation is eminently deserving of consideration; and that constitution of the atmosphere which promotes the dissemination of the disease, either among men or the inferior animals, ought to be particularly watched, when it is attempted to inoculate the latter with human small-pox. We believe that many unsuccessful experiments may be ascribed to the neglect of this precaution.

Mr. Lamb, who wrote from Dacca on May 9th, 1836, and described the disease among the cattle with great accuracy, although he did not frequently observe the co-existence of human small-pox and cow small-pox, nevertheless mentions, that when the former was prevalent at Dacca, the latter appeared in one *Muhalla* and carried off fifteen or twenty cows. He attempted to inoculate the cows with human small-pox, after the manner practised by Dr. Sonderland, but without success. The virus was then inserted on the udder, and about a dozen irregular pustules made their appearance, but he was unable to produce any effect from them by repeated trials on the human subject.

We will now advert to a letter from Mr. Brown, addressed to S. Ludlow, Esq., Superintending Surgeon of Barrackpore. Mr. Brown, who was stationed at Silhet, where the variolous disease was prevalent among the cows, selected from one of

them some of the dark brown scabs scattered over the back and abdomen. These he reduced to a pulp with water, part of which he inserted into the arms of four children. In all, correct vaccine vesicles were said to have been produced, the constitutional disturbance, however, being on the eighth day more severe than usual. From this stock, the disease was propagated during two months without any suspicion as to the genuineness of the affection. After this time, children in whom the virus was inserted, were on the eighth day attacked with fever, followed by an eruption which spread over the whole body, and in one case proved fatal. Mr. Furnell, whose own child perished by the disease, describes it as a true small-pox in its worst form. Connected with this detail we find the following interesting case:—Mr. T., about eighteen years of age, was first vaccinated in India in his infancy; he was re-vaccinated in Scotland, whence he had returned about eight months. Two days after his arrival in Silhet he was attacked with severe rigors, nausea, vomiting, and slight delirium. These symptoms were followed by a copious eruption, which spread over the whole body, and was evidently of a variolous character. The origin of this disease attracted the attention of Mr. Brown, and he observes, "we can only ascribe it to one or other of the two following sources of infection:—the eruptive disease which attacked the Europeon children above referred to, or that which prevailed epizootically among the cattle."*

In the present argument it is of little moment to which of these sources we ascribe the disease. The

* See the *Calcutta Quarterly Medical Journal.*

case is brought forward merely to show the feeling in the mind of the writer, that it might have arisen from the pestilence which was then raging among the cattle.

These facts have all but proved that the vaccine disease is not a preventive of small-pox, but the small-pox itself. In order to complete the demonstration, it is necessary to show that the *human small-pox* can be communicated to the cow in like manner as the disease of the latter has been communicated to man. There are good grounds for believing that many of the variolous pestilences that have at different times laid waste the various regions of the earth have been common both to man and the brutes. It would be improper in a report of this kind to enter into historical details illustrative of this point; but they are to be found in abundance in the writings both of the physicians and the chroniclers of the earlier and middle ages. We shall, therefore, at once proceed to mention other events that tend to confirm the opinion respecting the identity of the *human small-pox* and the *cow small-pox*. The first we shall notice occurred many years ago in America, and is recorded by Dr. Waterhouse, of Cambridge, Massachusetts, in a letter to Dr. Jenner. His words are, "At one of our periodical inoculations, which occur in New England once in eight or nine years, several people drove their cows to an hospital near a populous village, in order that their families might have the daily benefit of their milk. These cows were milked by persons in all stages of small-pox; the consequence was, the cows had an eruptive disorder on their teats and udders, so like the small-

pox pustule, that every one in the hospital, as well as the physician who told me, declared the cows had the small-pox."

No inoculations were performed with the virus from these cows, but it is impossible, we conceive, to doubt the fact that on this occasion the small-pox had been conveyed from man to the cow, just as it had been communicated, in the dairies of Gloucestershire, from the cow to man.

Many unsuccessful efforts were made by different individuals in England to put the question beyond all dispute, by directly inoculating the cow with human small-pox. This experiment is said to have succeeded at the Veterinary College, in Berlin, so early as 1801 ; and M. Viborg declares that he communicated the disease likewise to dogs, apes, and swine. It is mentioned in the *Saltzburgh Medico Chirurgical Journal*, for 1807, that Gassner was equally successful in imparting the small-pox to the cow by inoculation. Similar information is detailed in a paper read before the College of Physicians, by Dr. Mc Michael, in 1828. "Vaccine matter having failed in Egypt, medical gentlemen were led to institute certain experiments, by which it has been discovered that by inoculating a cow with small-pox from the human body, fine active vaccine virus is produced." It is added that several children had been vaccinated with this virus with complete success. Professor Sonderland, of Bremen, took another method to inoculate the cows. He covered them with sheets on which persons labouring under small-pox had lain, and in this manner, it is said, conveyed the infection.

It has been customary to treat all these examples as unworthy of consideration. This scepticism might have been justifiable at one period, but to persist in it after the direct corroboration about to be offered, would be to act in the spirit of Pyrrhonism, rather than in that of philosophic caution and candour.

What many gentlemen in this country failed to accomplish, we are happy to say has been at length achieved by one of the members of our Association, Mr. Ceeley, of Aylesbury. Influenced by some of the facts and reasonings mentioned above, he resolved to attempt to ascertain whether he could, by inoculation, impregnate the cow with human small-pox. Twice he has succeeded in accomplishing this important object after many previous fruitless trials. His experiments were conducted in the presence of five medical men and one veterinary surgeon. He produced five vesicles on the cows, from which source several hundred patients have been vaccinated, who have exhibited all the phenomena of vaccination in the most perfect form and complete degree; there was no attendant eruption, nor any thing that could lead him to suspect that he had not in this manner propagated the genuine *Variolæ Vaccinæ*. He kindly transmitted portions of this lymph to the President of the Section, who immediately committed it to the care of Mr. Coles and several other gentlemen, in whose hands it produced the most regular vesicles, which in every respect corresponded with those so beautifully delineated by Dr. Jenner, in his first publication. This circumstance forcibly arrested the attention of every one

who saw the vesicles, and that too, in several instances, though the source whence the lymph was derived was not known. The correctness of the vesicle formed by it, exhibits a marked contrast to that which we have seen produced by other virus now in use; and we fear that the local as well as general disturbance occasioned by the latter, so far from being a source of protection, will be found to be the reverse.

Though the detail of Mr. Ceeley's very interesting experiments will be found in his own communication, we deem the question so momentous that we are induced to offer a short abstract of some of them, which he has kindly enabled us to do.

On the first of February, 1839, he inoculated with small-pox matter (*variola discreta*), of the seventh or eighth day, three young heifers; a fourth was at the same time vaccinated. We shall not mention all the particulars connected with these examples, but select the first as an illustration of the admirable skill and judgment with which the process was conducted.

Mr. Ceeley made seven punctures and introduced fourteen points near the left *labium pudendi*, and on the same day inserted two setons with matter from the same subject. On the ninth day after this process, he vaccinated the same animal on the right *labium pudendi*, with fifth, sixth, and seventh day's lymph from a child, in seven punctures with fourteen points; and below the pudendum in four punctures with eight points. On the tenth day after the insertion of the variolous matter, one of the punctures near the posterior margin of the left *labium pudendi*

had assumed the form of the natural vaccine vesicle. By gently removing the central irregular crust, and carefully puncturing the cuticle, he was able, in the course of an hour, to charge thirty-eight points with lymph, and on the same and subsequent days to use part of it on children and adults. On the thirteenth day the small-pox vesicle was more inflamed and florid; this was the fifth day after the insertion of vaccine lymph, at which time all the eleven punctures were converted into effectual vesicles; from these he took fine clear lymph, and used it on children and adults. Both the variolous and vaccine vesicles subsequently ran nearly a parallel course; so that on the twenty-sixth day of the former, and the seventeenth day of the latter, the the scars of both appeared perfectly similar.

To obviate objections which might arise from the insertion of the vaccine lymph on the ninth day after the inoculation with the variolous matter, Mr. Ceeley re-inoculated a sturk on the 15th of February with small-pox matter, of the seventh or eighth day, on the *labium pudendi*. He made eight punctures, which were deluged with the variolous fluid from capillary tubes. On the fifth day the four upper punctures were enlarged and elevated; the other four were less so. On the sixth day all presented the appearance of the vaccine vesicle. From one of them he took lymph with difficulty, and scantily charged thirty-nine points. On the eighth day he again took lymph from the vesicle opened on the sixth. On the ninth day the vesicles were enlarging, and he again opened carefully the first vesicle and charged twenty points. On the tenth day the four

lower vesicles were increasing, and from them he charged twenty-seven points. After this time the brown crusts appeared, and the disease gradually declined. This animal was subsequently inoculated both with variolous and vaccine matter, but no result followed.

The practice of inoculating the cow with vaccine virus taken from man was very early attempted. It is not to be overlooked that the difficulty of accomplishing this, is almost as great as that of inoculating the animal with small-pox. It succeeded however in the hands of Dr. Waterhouse, who, in 1801, impregnated one of his cows, and obtained from her a "crop of matter on the ninth day, which produced the disease in the human subject to perfection." Mr. Fox, of Cerne Abbas, who has paid great attention to this subject, and seen the disease, as well among the cattle as on the hands of the milkers, has also successfully vaccinated the cow.

The same experiments have been performed at Passy, in the neighbourhood of Paris; the lymph found there in 1836, among the cows, has been recently again passed through the animal, and this is called retro-inoculation. Mr. Ceeley, too, has often been enabled to communicate the vaccine disease from man to the cow. He has observed that good human lymph, when transmitted in this manner, loses some portion of its activity; it rises late, and produces smaller vesicles, but ultimately, *after successive inoculations on man,* it resumes its activity.

We cannot refer to this triumphant and most important conclusion of an investigation of more than fifty years duration, without congratulating the Association that it has been accomplished in the country of Jenner, and in a manner to substantiate all his conclusions. Well may we now say, to use his own language, that "Vaccination is placed upon a rock," and that "if properly conducted, it will secure the constitution as much as variolous inoculation possibly can." In these statements he anticipated the demonstration which we have the happiness now to bring forward; and we dare not, without the greatest injustice, pass by this interesting and impressive incident in the history of vaccination, affording, as it does, another brilliant testimony to the skill and genius of a man who has not yet been honoured as he deserved.

The highly valuable information which we have just brought forward, cannot fail to have a most salutary influence. The right understanding of this question, both by the profession and by the public at large, we feel assured will greatly tend to remove the prejudices which still exist, to secure correct and satisfactory practice, and enable us to speak with confidence respecting its nature and object, as well as of the protection that it affords. The attempts that have been made to enforce the views contained in the preceding observations, have hitherto been less successful than might have been anticipated. Now we look forward to better results, hoping that the Report emanating from this Association, will effect what individual exertions could not accomplish.

Out of the materials collected in the preceding pages, and from other sources, we deduce the following aphorisms:—

First then, it has been proved that cattle, in many ages and different countries, have been afflicted with small-pox.

Secondly, that this disease among the inferior animals, has simultaneously existed with the small-pox in man, and pursued its victims through every quarter of the globe; and that it exists at this time in Asia in a fatal and pestilential form.

Thirdly, that it appeared among the cattle in England in the year 1745, and again in 1770, and continued its ravages up to the year 1780; and that the local remains of this epizootic occasionally still show themselves with considerable severity.

Fourthly, that the casual transmission of this disease to the milkers in the dairies of Gloucestershire, and their subsequent immunity from human small-pox, first led Dr. Jenner to the investigation of this singular affection, and ultimately to establish it as a substitute for the more pestilential and fatal form of the disease.

Fifthly, that when the disease appears among the inferior animals in a malignant form, it produces, by inoculation, a disease of similar severity in man.

Sixthly, that as man has received this affection from the cow, so likewise has the cow received it from man.

Seventhly, that the direct inoculation of the cow with human small-pox, has produced a mild and mitigated disease; and that such disease, reproduced by inoculation on man, accords entirely in

its character, in its progress, and in its protecting influence, with the *variolæ vaccinæ*, as described by Dr. Jenner, thus irresistibly proving his fundamental proposition, that cow-pox and small-pox are not *bonâ fidê* dissimilar, but identical, and that the vaccine disease is not the preventive of small-pox, but the small-pox itself,—the virulent and contagious disease being a maligiuant variety.

CORRECT VACCINATION AND IMPEDIMENTS THERETO.

In order that the subsequent observations may have a clear and definite meaning, we think it necessary to lay down plainly what we conceive to be required to render the process of vaccination as perfect as possible. We have been constrained to adopt this course from observing the great discrepancy that exists between the statements of different individuals with respect to its protecting power, which we are convinced could not have happened to such an extent, had uniformity of practice been followed.

From the commencement of this practice, efforts were made to ascertain when it had fully taken hold of the constitution, so as to afford reasonable hope of future security. The comparative mildness of the affection rendered this an important point of consideration, and up to this hour it has lost none of its interest. The only perfect test is that which arises from the insertion of the variolous lymph, but as that is on many accounts objectionable, it is better to find out, if possible, some other.

The first to which we would advert, is the regular progress of the vaccine vesicle, and we would lay it down as an axiom never to be forgotten, that no one is qualified to speak of its effective character who has not, at suitable periods, noted this progress. The genuine disease can only be produced by pure lymph from a regular source. The time for taking this lymph, according to Doctor Jenner, is between the fifth and eight days, and before the formation of the areola. Others have recommended the use of lymph taken at a much later period; but this we believe to be a very questionable practice, and ought never to be followed. It is very true that the affection may be propagated by virus found in the scab, but this only succeeds when active lymph is preserved in a dried state within the scales.

A test, dependant upon the successful progress of vaccination, was very early noticed by Dr. Jenner, and subsequently brought forward by Mr. Bryce, of Edinburgh. He proposed that some fresh vaccine lymph should be inserted into the patient a few days after the first vaccination. This practice was founded on the observation that the second vaccination proceeds with accelerated speed, provided the first has taken effect. It is a very simple and beautiful illustration of the constitutional effects of vaccination, and deserves to be encouraged. An experienced eye will for the most part be able to detect any deviation from the true vesicle. Unfortunately, the means of making correct observations are often denied to medical men, and any thing that would secure greater attention to this branch of the subject would be of high value, and unquestionably

would have prevented many of the failures that have recently taken place.

The second point demanding unvarying assiduity, is the character of the lymph employed. It never ought to be taken from a vesicle which deviates in the least degree from the perfect standard, nor from a patient labouring under any cutaneous disease. It is to be feared that these rules have not been punctually observed; and that deviations have been propagated, which afford varying degrees of security, according as they approach to or recede from the healthy character.

A third point which ought ever to be insisted upon, is the leaving one or more vesicles to run their course without being in any way disturbed. This canon was introduced at a very early period, but we have more than cause to suspect that it has been often defeated, either by the carelessness of parents, or the hurried manner in which vaccination is sometimes performed.

Another point on which perhaps too much stress has been laid, is the appearance of the cicatrix. It is true that after regular vaccination, it generally assumes an uniformity of aspect well known to medical men. The medical officers of the army and navy are compelled to rely a good deal on its appearance; and all recruits on whom it is supposed not to be perfect, are subjected to vaccination. The experience obtained from these services, is, so far as it goes, in favour of information derivable from this criterion. We are satisfied, however, that by itself it ought never to be absolutely trusted, and we must repeat here, what we have already observed, that

nothing but a watchful inspection of the progress of the vesicle will justify any one in speaking with confidence of the security likely to be attained.

From all we can learn, we are inclined to believe that though the presence of a perfect cicatrix is not a sure sign of protection, its absence must be held to speak strongly against the existence of vaccine influence. The peculiar appearance of the cicatrix is caused by the reticulated or cellular structure of the vesicle. The same organization occurs also in variola. Now, if the vesicle has been repeatedly opened or broken, the ulcerative process that succeeds destroys the organization of the cells and leaves a cicatrix nearly smooth, instead of the well defined indented surface, which for the most part may be seen after complete vaccination. It may also be observed that many persons who have been extensively marked and seamed by small-pox have had subsequent attacks of that disease, proving that after perfect human small-pox, as well as after perfect cow small-pox, a second attack may occur.

Mr. Dodd, of all our correspondents, seems to have paid most attention to this part of the subject. Of fifty-seven cases that had been exposed to the contagion of small-pox and escaped, in six only was the cicatrix perfect; in fourteen it was slightly defective; in thirty it was very imperfect; and in seven it was totally wanting. Out of seventy-seven cases of small-pox after vaccination, one bore a perfect mark, fourteen had the cicatrix slightly defective, forty-seven were imperfect, and fifteen had none at all. Thus, to sum up the whole, out of one hundred and thirty-four cases of vaccinated persons

who had been exposed to small-pox, the cicatrices of seven were perfect, and one of these failed; twenty-eight slightly defective, of which fourteen failed; seventy-seven very imperfect, forty-seven of which failed; twenty-two had no marks at all, and of these fifteen had small-pox, while seven altogether escaped.

Our correspondents amply justify us in laying down the foregoing principles; and we also think from the evidence before us, that vaccine lymph, though passed through a great number of subjects, and used for a great number of years, does not necessarily become deteriorated. This, however, can only be said when unceasing attention is paid to every successive transmission; for if a deviation commences, it may be perpetuated, and afford a gradually decreasing protection. There is no doubt that lymph of this kind has been often used. We have satisfactory illustrations of this truth from several of our returns. We will mention one out of many of this kind. Mr. Fox, of Cerne Abbas, thinks that more cases of small-pox have occurred after vaccination performed ten or twelve years, than after vaccination performed thirty years ago, and that this arises from the extensive propagation of imperfect cow-pox, which only affords a diminished amount of security. A remarkable instance came under his observation a short time ago. A father and two children were inoculated with fresh small-pox virus from the same child, and at the same time; both children caught the disease, and the father escaped, though he had been vaccinated more than thirty years. It will be observed in sub-

sequent parts of our Report, that failures are noticed at all periods, from a few weeks after vaccination up to thirty or more years. It has been supposed that they are most common at and after the age of puberty; but this is certainly not the opinion of our correspondents in general. Some, it must be admitted, do affirm that small-pox has more frequently occurred in persons recently vaccinated, than in those at a remote period, while others assert that time makes no difference.

The influence of cutaneous diseases on the progress of the vaccine vesicles is a point, too, demanding greater attention than it has hitherto obtained. At a very early period Dr. Jenner discovered that the affection was very much modified in its progress by the scaly tetter, and those affections described by Dr. Willan under the term *psoriasis*, as well as those vesicular eruptions commonly called herpetic. He observed that vaccination performed on a skin occupied by any of these diseases, "produces every gradation from that slight deviation from perfection, which is quite immaterial, up to that point which affords no security at all." We have seen the herpetic affection occupying the angles of the mouth, the upper portion of the lip near the nostrils, or the tender skin behind the ears, cause the vaccine vesicle to assume an incorrect form, containing an opaque fluid, with an irregular efflorescence of a dusky red colour. We have also seen similar irregularities commencing from a like cause, which completely disappeared on destroying the herpetic affection, by applying a little of the liquor plumbi. The case to which we at present

refer, was under the immediate direction of Dr. Jenner himself. The premature and jagged efflorescence round the vaccine vesicle had appeared. He immediately detected the cause; and by the application above alluded to, destroyed the disease of the skin. In a very short time the deviation disappeared, and the vaccine affection subsequently ran its course in a regular manner. It does not uniformly happen that vaccination is thus impeded by the pre-existing cutaneous maladies; but wherever the disturbance is in the slightest degree manifested, the vaccination ought to be distrusted, and repeated as soon as the skin has been brought into a healthy state.

It is a very long time since these truths were impressed upon the public mind; but we have had many proofs that they are not yet sufficiently considered; it is, therefore, our duty to recal them. Dr. Jenner's last publication particularly refers to this point of practice; and we know that it caused him much disquiet that his admonitions and instructions were so little heeded.

Among those of our correspondents who have had most experience, and whose success has been most uniform, we find unequivocal testimony to the accuracy of Jenner's doctrine on this head. Many have made no observation at all respecting it; while some mention dentition, general ill state of health, scrofula, &c., as impediments to vaccination.

Other constitutional peculiarities stand in the way both of human small-pox and cow small-pox. Some resist these affections at one period of their lives and not at another; and there are examples of the very

opposite condition, which show that the individual will receive either infection as often as it is presented to him. These pecularities frequently run in families. We know several children of the same parent, who have had modified small-pox after cow-pox; and not many months ago three brothers had small-pox after small-pox, one of these cases proving fatal. On this subject we have illustrations from Mr. Dodd, who tells us that six brothers and sisters in one family having been vaccinated when children, had the small-pox a few years afterwards. In another instance, two sisters vaccinated in infancy, were subsequently inoculated and had small-pox slightly, they both caught the small-pox again in 1837, and one of them had it very severely. Their father caught small-pox; their mother too, who was inoculated when young, had it again in the same year; their maternal grandfather, beholding from a window at night, the funeral of a friend who had died of small-pox, sickened of that disease and died. These are a few of the affinities and concordances between human small-pox and cow small-pox; and we doubt not that every subsequent observation will establish the analogies. In confirmation we farther remark, that the great object of inoculation with human small-pox, was to produce an affection as much like that of cow small-pox as possible, and by great care in selecting the virus to be employed this was sometimes accomplished in a very remarkable degree. On the other hand, it is known that the disease, when casually caught from the horse or cow, is often a severe one,—as severe, it was said by an experienced observer, as for the

most part was inoculated small-pox. We ourselves have seen it, when caught from the horse, exhibiting great intensity, the hands and arms being covered with the eruption.

We will conclude this subject by an extract from one of Dr. Jenner's unpublished letters. "The greatest of all impediments to correct vaccination is that which arises from an herpetic state of the skin, indeed, compared with this, all the rest are as dust in the balance; and when the rules which I have again and again laid down respecting this point, and for so long a period are attended to, then, and not till then, will the confidence of the public be fully established as to its preventive power."

PROTECTING POWER OF VACCINATION.

The information communicated in the preceding sections bears directly upon that part of the enquiry upon which we are now about to enter. As long as doubts existed respecting the character of the disease derived from the cow, as long as it was a question whether it was of a variolous nature, it was impossible to predicate with any certainty whether it was likely to afford a permanent or a transient protection. Now, however, that we are enabled to say that it is a true small-pox, modified by passing through the constitution of the cow, we may proceed to the examination of this division of the subject with a greater degree of confidence than could have been assumed at any former period.

The limited duration of the security afforded by vaccination was one of the earliest objections

advanced against the practice. It was in fact a theoretical argument urged with much vehemence by persons who knew little either of the nature of human small-pox or of cow small-pox. It had no solid foundation to rest upon, inasmuch as all the knowledge acquired from casual inoculation among the milkers was against the supposition.

Dr. Jenner's confidence rested partly on evidence derived from sources of this kind; but it would have been insufficient, had not his investigations led him to the conclusion that he was recommending a mild variolous disease, instead of a malignant one; and to this truth, demonstrated as it now is, all our researches necessarily point.

Be it remembered, at the same time, as has just been observed, that the security derived from human small-pox, by no means depends upon the number of pustules and the severity of the disease. On the contrary, the diminution of the number was the object of every expedient successfully employed for the mitigation of this dreadful scourge, and experienced inoculators were well aware that a few, or even one, was capable of securing the patient from subsequent attacks. In this respect, the inoculated small-pox occasionally approximated to the character of cow-pox; so much so, that one of the most eminent physicians in Germany exclaimed on seeing the latter—"This pock will surely secure against the small-pox, being nothing else but a real and true genuine small-pock of the mildest sort; and you all know that ten thousand pocks give no more security than a single pock."

We are now about to test the validity of this

opinion; and, first, we shall bring forward some of the adverse testimony. One gentleman tells us, that of nearly one hundred cases of small-pox attended by him last year, one half were after vaccination. Another reports, that of eighty cases of small-pox, sixty or sixty-one had been vaccinated. Our correspondent mentions at the same time, that the majority of these vaccinations had been performed by a superannuated excise officer. The only fatal case that occurred had been vaccinated by this man, and by him pronounced to be safe. In the former of these two unfavourable statements, it is not specified by whom the vaccination had been conducted; but we would hope that they had not been under the direction of a medical gentleman. With the exception of the Report from the Small-pox Hospital about to be noticed, we have not received communications from any other quarter so discouraging as those just mentioned. Some gentlemen state that one in twenty of the cases of small-pox had occurred after vaccination, others one in ten, and others without giving any specific proof estimate them at one in three. There are those who merely mention that they have seen many cases; and a considerable number affirm that they have not seen one case.

It was formerly believed that if vaccination did not uniformly protect from subsequent attacks of small-pox, it at least modified such attacks, and for the most part prevented death. Things now are considerably changed; and we have it asserted, that the modifying and mitigating influence is often not discernible, and that a mortality of a very

alarming description has occurred in those that have been previously vaccinated. We have a statistical table drawn up by Dr. Gregory, of the Small-pox Hospital, in London, stating that in that hospital one hundred and three patients have died of small-pox after vaccination, between the years 1820 and 1839 inclusive. We enter upon the consideration of this statement with great sorrow and reluctance. Coming from so high an authority, it is calculated much to deaden our fond anticipations of the benefits derivable from vaccination, while at the same time it calls upon us to endeavour to find out any facts that may tend to allay our apprehensions. The total number of deaths, reported by all the gentlemen who have answered our questions, throughout nearly the whole of England, amount to very little above thirty. Again, we have the authority of gentlemen who have been engaged in the practice of vaccination from its commencement down to the present time, who have never met with an instance of this kind. The excellent Mr. Dunning, of Devonport, the friend of Jenner, and one of the most scientific investigators of vaccination, thus wrote to a member of the section a few months ago :—" Dining at the last quarterly meeting of a medical society established in these towns (*i. e.*, Plymouth and Devonport) nearly half a century ago, and of which I am now the only original member remaining (present fifteen members), and hearing them eagerly enquiring for some of *the pearl upon the rose,** I said, Gentlemen, I have to

* Dr. Jenner's figurative description of the vaccine vesicle.—See his Life, vol. ii., p. 305.

ask you all one straightforward question—How many fatal cases of small-pox after vaccination have you met with in your respective practices? Unhesitatingly and loudly all replied "Not one." We have expressly similar evidence from many towns in Gloucestershire—towns too where small-pox has often appeared, but has never proved fatal to one vaccinated person. More than two-thirds of the gentlemen who have favoured us with their experience, have not met with any case of this kind; one mentions seven, five of which were presumed to be *after perfect, two after imperfect vaccination;* six mention two; sixteen mention one, and one of these was uncertain.

The period to which some of these answers apply, extends nearly to the commencement of the practice. Mr. Warner, senior, of Cirencester, who began in 1802, and has vaccinated from six to seven thousand, has not met with more than ten or twelve failures, and not one death. Another gentleman, the late Mr. Wood, of Cheltenham, who commenced in the year 1805, under the immediate inspection of Dr. Jenner himself, and who continued to practise very extensively up to the last year, though he met with a few modified cases of small-pox after vaccination, never saw a death. We have testimony to the same effect from Dr. Henry Jenner, who was associated with his distinguished uncle in all his enquiries; he says he has never seen a death from small-pox after vaccination. From Mr. Ricketts, of Droitwich, we learn that he has extensively and gratuitously vaccinated for the last twenty-four years without ever having seen a case of regular small-pox subsequent

to vaccination in his own practice, and certainly not twenty cases of modified small-pox, and no death.

Mr. Ceeley, to whom we are so much indebted for valuable information on the subject of the *variolæ vaccinæ*, tells us that cases of small-pox after vaccination were rather more frequent in those long since, than in those recently vaccinated; but that cases occurred from one and a half to thirty years after vaccination. He adds that the modification in those which had been vaccinated twenty-two, thirty, and thirty-two years, was quite as great, or even greater, than in those who had been vaccinated only one and a half, or two and a half years.

Within the last three years, he mentions small-pox as unusually prevalent. There were twenty-eight deaths last year in Aylesbury, but not one of these occurred after vaccination. Mr. Ceeley observes, that the influence of vaccination in wholly preventing small-pox in a great majority of cases, and, where it failed to protect, in rendering the disease infinitely milder, was so palpable, as to compel the most prejudiced, and the lower classes in general, to recognise its value, and readily to seek its influence.

Another experienced observer, Mr. Goolden, of Maidenhead, who has been thirty-two years in this practice, states that though small-pox had prevailed last winter to a great extent, and was very fatal, he had not seen, in proportion, more cases of that disease after vaccination, than of small-pox after small-pox. He likewise affirms that the cases of failure are not more frequent than formerly; on the

contrary, considering the almost universal practice of vaccination, the proportion is diminished. Of such failures he remarks that he has reason to believe that many of them arose from neglecting to note the progress of vaccination, and making use of lymph from an imperfect vesicle, which only affords a partial security. Notwithstanding such negligent proceedings, he had not heard of one fatal result.

Of equal value is the testimony of Mr. Greenhow, of Newcastle-upon-Tyne, who thus sums up his experience :—" Leaving these details, I may observe that the most convincing proof of the immense importance of vaccination is to be found in the general result. If we look around us, we are seldom impressed with dismay at the disfigurement of the faces of our neighbours, or the destruction of sight which formerly resulted from the constant prevalence and severity of small-pox, and if a death or two occur in the neighbourhood, the public feeling, which they never fail to excite, is sufficient proof of their diminished frequency.

" On the whole, my own conviction amounts to this, that vaccination is at least equal in its protecting power to small-pox itself, for I see more severe cases of secondary small-pox, than of that disease after vaccination ; and that, notwithstanding its occasional failure, it has been the means of saving an incalculable number of lives, millions of pretty faces, and thousands of persons from loss of sight."

According to Mr. Batt, of Brecon, who began to vaccinate in 1798, very few cases of small-pox have followed vaccination in his experience. In most instances of that description which he has heard of,

the vaccination has either been interrupted in its progress, or performed by a non-medical person. He gives a melancholy example of the effects of such mal-practice; a large family had been "cut" by an itinerant quack, most of whom subsequently caught the small-pox and died. On enquiry, he found that not a trace of vaccine vesicle had been excited. The only case of failure that had taken place in his own practice, was after a lapse of twelve years, and he ascribes it to the breaking up of the vesicles to supply lymph for vaccinating other persons; the case was confluent, and nearly proved fatal. The brothers and sisters of the patient, who were constantly with him in the same room, escaped. He has never seen a fatal case of small-pox after vaccination, but he has seen five cases of small-pox after small-pox.

Mr. Bloxham, of Newport, Isle of Wight, states that he and his father could, altogether, enumerate about twenty-four persons in whom small-pox had followed vaccination; of such cases they themselves had only seen nine, two of which occurred between June 6, 1837, and June 6, 1838. This, we believe, includes their experience during the whole of their professional lives. It is farther added that there had not been any death from small-pox during the last year, though the disease had been introduced into the poor-house, but by great exertion it was prevented from spreading, seven out of seventy-four children only having taken it. This testimony is corroborated by that of Mr. Phené, of Ryde, who had, during the last year, seen no case of small-pox at all. Mr. Bloxham likewise says that he does not find

cases of small-pox after vaccination more frequent now than they were fifteen years ago.

Mr. Trash, of Upton-upon-Severn, whose experience has been almost coeval with the promulgation of this practice, states that he has seen no cause to doubt the efficacy of vaccination. Since he left the army, and settled thirty-one years ago, he has had two cases of small-pox after vaccination, both very mild and modified; he has had three cases of secondary small-pox, two after inoculation, one of which proved fatal.

Dr. Hennen, Physician to the Royal Military Asylum for the reception of the orphans of British soldiers, states that all the children admitted into that institution are vaccinated, whether they have been previously vaccinated or not. From the year 1819 to 1837, one thousand four hundred and six children have been admitted; of these one case of small-pox or varioloid eruption happened in 1826. Eight other cases, which in his returns are classed as chicken-pox, appeared during the whole of the above mentioned period. This is the more satisfactory, because he mentions that small-pox had been very prevalent and fatal among the poor within the last few years.

Our Secretary, Mr. Dodd, mentions two hundred and one cases of small-pox as occurring in the year 1837. Of these, one hundred and fourteen were after reputed vaccination. Ninety-one cases were mild, twenty-three were severe, and two were fatal. Of the eighty-seven unvaccinated persons, twenty-nine cases were mild, fifty-eight were severe, and seventeen fatal.

He also gives an account of one hundred and one cases which had been vaccinated and subsequently had small-pox, with a view to illustrate the periods that elapsed between vaccination and seizure by small-pox, from which it is shown that the greatest number occurred after a period of one year, namely, nineteen ; whereas, on the other hand, the number of failures seems to diminish with time. In connexion with this subject is another statement of sixty-five cases that had been vaccinated, and subsequently exposed to small-pox, both by inoculation and effluvia. The period of exposure varied from one year to thirty-four, and the disease was resisted by the whole.

Though Mr. Dodd mentions so many cases of small-pox after vaccination, it is proper to add that he has *not seen a single instance of small-pox in a patient whom he had vaccinated, though he had resided at Chichester ten years.*

We will next advert to the reports from the vaccinators of the National Establishment, including their experience from the year 1825 to the year 1832. In that period eighty-three thousand six hundred and forty-six patients were vaccinated at the different stations. Among the whole of that number, only two cases of death from small-pox after vaccination are mentioned, and one of these was of a very doubtful nature. The patient, Sophia Wallis, was vaccinated May 10th, 1829, but was not in attendance afterwards for inspection ; the mother reported that one spot arose in one arm, and attained its utmost height on the third day, and this circumstance is sufficient to prove that the process must have been

incomplete. The other cases of small-pox after vaccination mentioned in the report are very few, and the majority occurred in persons who had been exposed to variolous influence previous to infection.*

Another very interesting document is found in the same report. It contains a return of the children admitted into the Royal Military Asylum at Chelsea, from the commencement of the institution in August, 1803, to August, 1833, and specifies the number who had undergone vaccination, small-pox, varicella, &c. Those reputed to have had small-pox previous to admission were two thousand five hundred and thirty-two; one thousand eight hundred and eighty-seven being boys, six hundred and forty-five being girls. The number reputed to have been vaccinated before admission was three thousand and sixty; viz., two thousand four hundred and ninety-eight boys, and five hundred and sixty-two girls. Those who had small-pox after reputed small-pox were twenty-six; fifteen boys, and eleven girls. The cases of small-pox after reputed vaccination were twenty-four; nineteen boys, and five girls. The total vaccinated at the Asylum subsequent to admission was six hundred and twenty-eight; viz., four hundred and sixty boys, and one hundred and sixty-eight girls. Of the whole, only two boys and one girl caught the small-pox. Five deaths occurred; four boys and one girl. Of these five children, three had the disease after reputed small-pox, and two had neither been vaccinated nor had undergone small-pox before. We regard

* See Appendix to Report from Select Committee on the Vaccine Board, page 140.

this document as one of the most important that has appeared in this country. It very fairly tests the qualities both of small-pox and cow-pox. All the patients were placed under exactly similar circumstances; and what is the result? A greater number of cases of small-pox followed small-pox than vaccination; and of the five fatal cases, three were after small-pox, whereas not one occurred after vaccination. This convincingly shows what may be done by cautious and prudent management; and on that account eminently deserves the serious attention both of the profession and the public.

These statements are in accordance with the experience of the majority of our correspondents. We will now avail ourselves of some occurrences that have recently taken place in Dublin.

At a meeting of the College of Physicians held on the 18th of January, 1839, Dr. Montgomery advanced the opinion that vaccination affords only a temporary security, and that its protective influence is now less than it was when the practice commenced. This called forth important counter-statements from several of the physicians and surgeons of that city. Dr. Maunsell asserts that the real origin of the failures is to be found in the neglect of the careful performance of vaccination, and to the practice of small-pox inoculation, which is indirectly encouraged by the alarmists. Dr. Labatt, who, from the commencement, has bestowed the most unwearied attention to the character of vaccination, and watched its practice with equal care, thus delivers his sentiments:—"It is very true that many instances have from time to time been brought before

the public, of persons attacked with small-pox, who were believed to have regularly had the cow-pox; but from my experience of the manner in which the latter has been conducted, I assert, without fear of contradiction, that these reputed failures have almost invariably originated either from want of skill, or inattention of practitioners, from inoculation having been performed by unprofessional persons, or the extreme inattention of parents and others in not showing children at the several stages of the affection. I do not pretend to say that cow-pox any more than small-pox inoculation is infallible, but having been thirty-six years and upwards extensively engaged in the practice, without witnessing a single case of death from small-pox after regular vaccination during that period, nor more certainly than ten, if so many, in which small-pox (in four of whom the disease was severe, and in the remainder very mild,) occurred in persons who previously had cow-pox, I feel justified in stating that cow-pox, if skilfully applied, and conducted with that attention which it requires, will almost invariably afford a permanent security against small-pox." He farther adds, my experience leads me to say, with the immortal Jenner, that perfect vaccination is permanent in its influence.

Dr. O'Brien, senior physician to the Fever Hospital, which is the chief receptacle for small-pox among the poor of Dublin asserts that no case had occurred in that institution during the last twelve months, and that for a period of twenty-five years a few incidental cases only of small-pox had been admitted into the hospital, and those were generally persons who had not been vaccinated. He does not

recollect the disease being communicated to any of the surrounding attendants or patients, though it was sometimes of a malignant and confluent character. This he attributes to the immunity afforded by vaccination. It is his opinion that the cause why small-pox has increased in Great Britain to an alarming extent, while it is nearly extinct in Ireland, is to be found in the neglect or careless employment of vaccination in one country, and to its universal adoption, and more attentive, not to say scientific, performance in the other. We may observe in passing, that the report from Glasgow noticed in another page, strikingly corroborates this opinion of Dr. O'Brien.

One other testimony from the Dublin Foundling Hospital may be added. The late Professor Creighton introduced vaccination into that institution in the year 1800. Many of the children were at two different periods inoculated with small-pox virus under his inspection, and completely resisted it. His son, who has now been surgeon to the same institution for more than twelve years, mentions that "nothing has occurred in its medical annals to take from or condradict the experiments mentioned above. Many of the subjects of them are still living, and amongst them my brother, who was tested with the small-pox infection at two distinct periods; the first at seven years, and the second at ten. He resisted the disease. He is now upwards of thirty, and has often been exposed to small-pox without any effect." This communication is dated Foundling Hospital, February 15th, 1839.

The last report of the Dublin Cow Pock Institu-

tion, which has been kindly sent to us by Dr. Labatt, contains some facts which speak powerfully in favour of the permanent security afforded by perfect vaccination. In the year 1827, the small-pox appeared in one of the largest institutions in Dublin, the average number of inmates being between 2000 and 3000. The disease attacked one hundred and six individuals, and was confined chiefly to the nursery, in which were one hundred and forty one children, together with their mothers or nurses, many of the latter having been vaccinated during their infancy or childhood, and they all escaped the small-pox, though placed under circumstances most favourable for the reception of the infection. Up to the 28th of March of the present year, thirty-eight cases of small-pox have occurred, and notwithstanding the close and constant intercourse which arises from the crowded state of the establishment, no instance of small-pox after vaccination was observed, excepting in one child, who was said to have been vaccinated two years ago in Liverpool, but on whose arm there was no trace of cow-pox.

Mr. Kirby, of Dublin, likewise, who for a period of more than thirty years has had most extensive opportunities of observation, both in public and in private practice, states in the most unqualified and emphatic manner, his firm belief in the protective power of vaccination. He is thoroughly acquainted with Dublin and its prevailing diseases, and he justly observes that he must have seen variola among adults of all ages, had the prophylactic virtues of vaccination been temporary and evanescent as some have asserted them to be.

We cannot pass by this division of our enquiry without referring to the experiments and opinions of Dr. Sacco, of Milan, unquestionably the greatest vaccinator in the world. He, a few years ago, inoculated with small-pox a considerable number of individuals who had been vaccinated from six to twenty-four years, and he found that they all resisted the disease. To this may be added the testimony of Dr. De Carro, of Carlsbad, formerly of Vienna, one of the earliest and most distinguished promoters of this discovery on the Continent. In a letter lately transmitted to the President of this Section, he observes, "as far as I know, vaccination is perfectly well carried on in Germany. In Austria it could scarcely go on better." He has likewise afforded a very strong testimony to the permanency of the character and influence of the vaccine lymph. He had presented a memorial to the Government of Bohemia, proposing that all physicians and surgeons in that kingdom who should have occasion to observe either the *variolæ vaccinæ* or the *variolæ equinæ*, and obtain lymph from such sources, should be instructed to communicate their observations to the respective authorities, in order to increase our knowledge of a subject so important to mankind. Dr. De Carro was induced to take this step in consequence of the *variolæ equinæ* having been lately found in Bohemia by Dr. Kählert, of Prague, who had employed it successfully, both in inoculating cows and the human species. The Government referred the question to the faculty of medicine, who having carefully deliberated upon the subject, observed that they did not consider the renewal of

the vaccine lymph indispensably necessary, inasmuch as that then in use presented always the same succession of symptoms, and had lost none of its primitive efficacy, and as long as this continued, they believed that nothing could be added to its perfection as a preservative.* This last remark leads us to a point which at this moment is attracting no small degree of attention in this country. It has been assumed that the lymph now in use is less active, and that the vesicles which it engenders are less developed and perfect than they were in former years; and to this circumstance has been ascribed the increased number of cases of small-pox after vaccination which have been recently observed. We are quite prepared to admit that lymph of this deteriorated quality has been too often employed, but we do not think this circumstance at all justifies the conclusion that has been drawn from it. About the years 1817, 1818, and 1819, many complaints arose from different parts of Europe of the imperfect or inefficient character of the lymph then in use. A vast number of inoculations were performed with lymph of this character. How far it may have been diffused it is impossible to tell; but it is highly pertinent to observe that a great majority of the failures which are said to have occurred of late years, probably happened among persons who received this deteriorated lymph, it having been observed that individuals who had been vaccinated about the periods above mentioned, have been principal sufferers from small-pox. Within these few months we have seen vesicles produced by

* See *Almanach de Carlsbad*, 1834.

lymph very recently obtained from the cow, and vesicles produced by lymph transmitted from one subject to another for a long series of years, and no defect in the qualities of the latter could be detected, they being equally complete and well formed with the former. The same truth is substantiated by one or two of our correspondents, especially by Mr. Taylor, of Cricklade, who says, in reply to one of the questions, "I had an opportunity some years ago of using lymph obtained from the cow, and my impression at the time was, that the character of the vesicles was essentially the same with that obtained from the older lymph." The testimony of the National Vaccine Board is precisely in accordance with this experience, as may be seen by a reference to their last report.

While we feel ourselves called upon thus to express our belief in the permanent influence of duly conducted vaccination, we would at the same time recommend the employment of genuine vaccine or equine lymph whenever it can be obtained, cautioning gentlemen to acquire such a knowledge of the disease among the inferior animals as will prevent them from employing matter from other eruptive affections which afford no protection at all, and which caused much perplexity to Dr. Jenner in his early investigations. The means of producing the true disease are now, by the labours of Mr. Ceeley, placed within the reach of every one, and those incorrect pustules to which cows are liable, and which it is to be feared have too often afforded spurious matter for inoculation, will henceforth be avoided. It is needful to bear these things in

mind, as we perceive that the efficiency of the virus has recently been estimated by the degree of excitement, both local and general, produced in the constitution. We have lately seen several instances where the disturbance was very great, and we are anxious to recal to the minds of our professional brethren the important observation, that extensive and active local inflammation, so far from betokening perfect vaccination, is almost invariably symptomatic of the reverse. In proof of this, we would refer to the beautiful representations of the vaccine vesicle originally published by Dr. Jenner, and the cautions delivered by him on this very point. In connexion with this subject, we may mention another practice which has arisen, we believe, from incorrect views of the best means of producing vaccine influence. All who imagine that local or constitutional irritation measures the intensity of the effect, wish, of course, to increase that intensity by employing what they conceive the most active virus, and multiplying the number of vesicles. The insertion of the virus in three, or, at the most, four places, we believe to be quite sufficient. This will allow of one or two of the vesicles to be opened for the abstraction of lymph, and the others to proceed in their regular and undisturbed course. If this be done, and the lymph be pure, and the constitution unoccupied by any other disorder, the protection will be as great as if a much larger number of pustules had been excited. This truth is in some degree illustrated by the analogy of small-pox itself, as many of the secondary cases have occurred in individuals who previously had the disease in a severe form.

Another law with regard to the protecting power of vaccination has been recently laid down. Vaccination, it is said, may afford a degree of protection amounting almost to perfect security during the early period of life; but that it loses this protecting power at the age of puberty, and undergoes a gradually diminishing influence from this time to confirmed manhood. Some tables published in the last Report of the Small-Pox Hospital, seem to countenance this idea. It is assumed that this proposition could not have been known to Dr. Jenner and his immediate followers. We are not exactly aware of the grounds on which this opinion rests. Dr. Jenner lived twenty-seven years after the inoculation of his first patient, Phipps. More than two generations must have reached the age of puberty in that interval, and, if the truth be as it has been represented, it must have been as fully brought to light before his death, as at this period. But seeing it has only been started lately, and the instances by which it is supposed to be confirmed have occurred since his decease, we may infer that they may have arisen from a cause of a different kind. Eighteen or twenty years ago, as has already been said, complaints were very generally made of the imperfection of the vaccine virus. Inoculations performed at that time with such imperfect virus, may perhaps explain the reason why so many failures have taken place in persons of the ages referred to in the tables.

It is our duty also to specify that the information derived from the ablest medical gentlemen in Gloucestershire, and from enquiries instituted respecting the state of patients vaccinated, both by Dr. Jenner

and his immediate connexions, gives no support to the notion. Had it been well-founded, many epidemical attacks of small-pox which have prevailed in this district, must have confirmed it. In the town of Cheltenham there has been considerable prevalence of small-pox during the last few months. We have had several cases of small-pox after small-pox, one of which was fatal. There have been cases of modified small-pox after vaccination, but these failures have certainly not happened uniformly at the period at which we are taught to expect them.

From an impartial review of the whole of the evidence submitted to us, we are called upon to declare that, with one exception, we do not find any thing to authorise statements respecting periodical failure. That the protecting power of cow small-pox may disappear, must be conceded; but this is no more than occurs with those who have had human small-pox, for they are alike subject to a second attack of the same disease. After the demonstrations already given, we feel ourselves called upon to stand firmly upon this ground. Opinions, which formerly admitted only of analogical illustration, have now received direct and positive confirmation, and we, therefore, hold it to be proved beyond all doubt, that the same general laws which govern *human small-pox*, apply, "*mutatis mutandis*," to *cow small-pox*. We have a great weight of testimony, all entitling us to assert that the cow small-pox, duly and efficiently communicated to man, does not lose its influence by time. From personal observation, we are entitled to speak with considerable confidence on this point; and many of our

correspondents, who have been longest acquainted with the practice of vaccination, tell us that they have met with nothing leading them to believe that such a law exists with respect to the disease. Some have not specifically touched upon this part of the subject, but the proportion of those who speak decidedly respecting both the completeness and the permanency of the protection, may at least be quoted as ten to one. We have such expressions as the following:—"Vaccination properly performed, not transient, nor evanescent."—"When perfect, vaccination affords not a temporary but an unlimited protection."—"When it is genuine, its protection continues through life."—"Feels no fear if the virus be good, and if it go through all its stages."—"Protection complete through life if the perfect disease be given." It is unnecessary to produce more language of this kind.

Conflicting evidence we have. There is, however, no other way of proceeding on such occasions but by recurring to first principles. The questions therefore we are constrained to ask, when we hear of a great number of cases of small-pox after vaccination, are—

1.—Has the lymph been pure and perfect?

2.—Has the development of the affection been regular and complete?

3.—Has the state of the recipient, both with regard to the condition of the skin and other constitutional peculiarities, been such as to present no impediment to the regular course of the affection?

We find that all the gentlemen whose sentiments are most firm and uncompromising, and who appear

to have most carefully watched the character and progress of *cow small-pox*, have paid the most undeviating attention to these points. They never take lymph from an imperfect vesicle, nor at an improper time; they are not satisfied if the areola appears too early, or if it is irregular in its form; they never consider a patient safe unless one or more vesicles have been left untouched. Now all these are conditions, the value of which has been ascertained by the experience of forty years; and it admits of no dispute, that gentlemen who have sedulously kept them in view, have had reason to be gratified with their success. It is not for us to say whether, under circumstances of a more unfavourable nature, all these essentials have been attended to; but it becomes us to say, that *unless they have been invariably attended to, no one is entitled to assert that vaccination has been duly performed.* Could we apply this principle to some of the most discouraging returns presented to us, we are confident that they would wear a very different aspect from what they do at present. In one or two of these examples the vaccinations have been performed by persons not at all connected with the profession, and of the lowest and most illiterate classes.* We cannot, therefore, be surprised that disappointment should occur when so delicate a process is conducted by such unskilful hands.

All cases of reputed vaccination, unless they have passed under the review of a competent judge, who

* Itinerating quacks, petty tradesmen of an inferior order, blacksmiths, excisemen, nurses, druggists, &c.; the poor, one with another.

has witnessed the different stages of the affection, should be considered AS NO VACCINATIONS AT ALL.

Until this canon be universally admitted and acted upon, we shall never have attained the complete security that vaccination is capable of affording. Failures may still occur, but they will neither be so numerous nor so fatal as they have been reported. We have abundant evidence for these positions, derived from long experience; and have now the superadded confidence obtained from a real knowledge of the nature of the disease of which we are treating. *Cow small-pox and human small-pox, we repeat it, are alike in their general properties; and if the latter, once taken, for the most part prevents subsequent attacks, so, in like manner, does the former.*

SMALL-POX AFTER SMALL-POX.

Having already adverted to small-pox after vaccination, we have a few remarks to offer upon small-pox after small-pox. This occurrence is still questioned—a scepticism somewhat remarkable, considering the evidence by which the truth is supported. Many of the older writers believed the fact; neither was it overlooked, till it was found expedient to induce persons to submit to small-pox inoculation. It forms a very essential part of our duty to dwell upon this point, and to show that if there are different degrees of protection afforded by *human small-pox,* so, in like manner, must we look for gradations in the protecting power of the *cow small-pox.* This was an axiom maintained by

Dr. Jenner, when our knowledge was less complete than it now is; and it affords us peculiar gratification to be able to affirm that the information which we have this day the honour of communicating to the Association, does most thoroughly sustain his opinion. Independently, therefore, of a host of medical writers who published before the practice of vaccination commenced, we have statements from a large number of our correspondents amply confirming the same; and were our registers of vaccination and small-pox inoculation as complete as they might be, it would be found, we believe, that the prophylactic power of these affections accords much more entirely than is generally imagined. This, however, implies that vaccination has been in all respects perfect.

Before we specify events that have taken place very recently, we would refer to the epidemic which prevailed in the years 1818 and 1819. There can be no doubt that this was a disease of a variolous origin, assuming a modified form when it appeared among persons who had previously been vaccinated, or had small-pox, but taking on its true, unmitigated, and fatal form, in those who had not been so protected. It has also been ascertained by direct experiment, that inoculations with the modified virus will produce in the first degree regular vesicles, with a central depression, and a silver hue, precisely like the genuine vaccine. This character, however, was not perpetuated, for on the second inoculation the true small-pox followed. Several of our correspondents, but particularly Dr. Blackmore, of Bath, have suggested experiments to confirm this

point, but those performed by Sacco, of Milan, so completely establish it, that all doubts ought to be removed.

Now the converse of this proposition is also demonstrable in a very remarkable manner. At the commencement of the practice of vaccine inoculation, the vaccine and the variolous lymph were mingled together, and an eruptive disease of a true variolous character was the consequence. By repeated inoculations with this lymph, the disease became milder and milder, till the vaccine influence predominated, and at last the genuine solitary vesicle appeared. The accuracy of this statement is indisputable, inasmuch as genuine and fatal small-pox was propagated by contagion from this affection, before it had by repeated inoculation assumed its mild form. Here we have another proof of the analogies which subsist between the variolæ of men and of the inferior animals.

The same truths may be exemplified in another way. Thus, it is found that in persons inoculated with vaccine and variolous matter about the same period, both inoculations proceed and mutually controul each other. This even may be witnessed when the inoculations are performed not quite simultaneously, but within a few days of each other. When, however, a longer time has been permitted to elapse, this controuling power is not observed, and the vaccine or variolous disease will predominate and run its course, according as the one or the other has had the precedence in the constitution.

In Norwich, we learn from Mr. Crosse, that out of six hundred and three persons affected by that

disease, two hundred and ninety-seven had previously had small-pox, that ninety-one had been vaccinated, and that two hundred had neither had cow-pox nor small-pox. Of this latter number, forty-five perished. Of the ninety-one vaccinated persons, all, with the exception of two, had a mild affection. The same seems to have been the case with the two hundred and ninety-seven who had previously had small-pox. His correspondents, however, informed him of many secondary cases of small-pox, three of which are stated to have been fatal.

In Edinburgh, Dr. Thomson saw five hundred and fifty-seven cases. Of this number, two hundred and five had neither had small-pox nor cow-pox, forty-one had gone through the small-pox, and three hundred and ten had been vaccinated. Of the first class, fifty died; of the second, including thirty cases communicated by a friend, making in all seventy-one, three died; of the third, one is reported to have died, but it is represented as an anomalous case, not of small-pox, but of peculiarly aggravated chicken-pox. It is needless to accumulate examples of this kind, as the same results have attended every similar epidemic that has been described in different parts of Europe.

We think that the occurrences at Marseilles in 1828 bear fully on this point. At that time, there were thirty thousand persons in the town who had been vaccinated. Of these, two thousand were attacked with small-pox, and twenty-one died. Two thousand persons had previously had small-pox, of whom twenty had it a second time, and four died.

We have already given an account of the occurrences at the Orphan Asylum at Chelsea; the proportion of cases of small-pox after small-pox being decidedly greater than that of small-pox after vaccination.

The evidence drawn out by our own circulars strongly corroborates this part of our subject. The returns are occasionally vaguely expressed, many gentlemen saying that they have seen "a few cases" of small-pox after small-pox; others give distinct numbers, as three or four. According to the most accurate calculation that we can make, there cannot be fewer than two hundred and thirty-nine cases recorded by sixty-two correspondents; of these, twelve or thirteen proved fatal.

The most remarkable examples have been forwarded to us by Mr. Goolden. In his professional life of upwards of forty years, he has seen between eighty and ninety cases of "small-pox after small-pox, four of which proved fatal; many were confluent and very severe." He had heard of small-pox a third time in two families; and by reference to the parties ascertained it to be true.

If we except the fatal cases of small-pox after vaccination which are reported to have occurred in the Small-Pox Hospital in London, the deaths from small-pox after small-pox in the country correspond very nearly with the deaths from small-pox after reputed vaccination. This coincidence is more deserving of notice, when it is considered that small-pox of late years has been very much controuled, and infinitely less diffused than it was before the introduction of vaccination.

RE-VACCINATION.

The practice of re-vaccination has always been more or less adopted. It was generally recommended when the first vaccination had been imperfect, or when the fears of the parents led them to suspect that the protection was incomplete. It is only, however, within these ten years that extensive and systematic re-vaccinations have been employed in several of the Continental States.

Two opinions, somewhat opposed to each other, seem to have given rise to this practice. The one rests on the belief that after a certain period the influence imparted by vaccination, how complete soever it may have been at the commencement, gradually subsides, and leaves the person a prey to the malignant effects of small-pox contagion. This is a supposed constitutional change, totally irrespective of the quality of the virus, and cannot be obviated by any care or precaution that can be employed. The other view assumes that it is the virus itself which becomes deteriorated, and that the permanency of its effects is thereby lessened. Before we make any remark on these opinions, we shall take up an important preliminary question, and endeavour to find out whether a successful re-vaccination necessarily proves that the individual who is the subject of it, is thereby shown to have lost his vaccine protection, and, consequently, to have been liable to small-pox infection. This is a very essential point in the enquiry; for if the affirmative is sustained by accurate investigation, it might lead to very discouraging views.

We are sorry to observe that this unfavourable opinion has been too readily adopted and diffused in England. We have been told that the partial protection is not only demonstrated by such trials, but likewise that another truth has thereby been manifested, namely, that the protection diminishes in a ratio which may be measured by the time that has elapsed from the first vaccination. We hope to make it appear that both these conclusions are erroneous. The first has, indeed, in some degree been countenanced by the assertion of Dr. Jenner, who said that "if the constitution shows an insusceptibility of the vaccine influence, it commonly does of the variolous likewise;" and he was in the habit of recommending re-vaccination, in order to ascertain whether the individual was secure from small-pox.

We suspect that this statement, accurate in the main, has led to inferences that are incorrect. We know, at least, individuals vaccinated many years ago, who, last winter, as well as on many former occasions, were exposed to small-pox contagion, and resisted it. A very short time after such exposure, they were re-vaccinated, and a complete vesicle appeared. Again, the converse is shown by a circumstance which has recently come to our knowledge. A clergyman who was vaccinated in his infancy, was, about ten months ago, re-vaccinated, and completely resisted the infection. Two months afterwards he was exposed to the contagion of small-pox, caught the disease, and had it somewhat severely. We know likewise of cases in which small-pox followed re-

vaccination; one took place a few weeks after that process; another is mentioned by Mr. Bailey, of Thetford. A pupil of his was vaccinated when an infant; he attended many severe cases of small-pox, and fearful of the infection he re-vaccinated himself, and went through the disease well. Last winter, while at Guy's Hospital, he took the small-pox, had it smartly, and was obliged to leave town for the country, to recover his health.

We know another case that deserves to be noticed. A lady was vaccinated in 1806. She was re-vaccinated in 1833, and resisted the infection. In 1839 she was exposed to the influence of small-pox in a house where a child died of that disease. On this occasion she was seized with a violent incursive fever, which was succeeded by a slight variolous eruption, but it died away in a few days. It may be mentioned at the same time, that her sister, who was vaccinated in 1809, had also a slight attack of small-pox, having had about thirty pustules.

It sometimes happens after a person has had small-pox, that a local influence may be produced by every insertion of variolous matter. This fact was familiar to some of the early inoculators of small-pox, who, we have been told, were accustomed in this way to reproduce the virus on their own bodies, and thus preserve it for successive inoculations, as occasion required; and we believe that, in like manner, a vaccine vesicle might be excited.

We find a satisfactory elucidation of these views in the work of Dr. Heim, though he adopts the notion that vaccination taking effect under any circumstances, is a proof that the individual was

susceptible of small-pox. But be this as it may, the fact we wish to insist upon is, that re-vaccination succeeds or otherwise on persons who have had small-pox or cow-pox, almost exactly in the same ratio; thus establishing another most remarkable analogy.

The proportion of one hundred cases of each description is as follows:—

Vaccinated after small-pox, with success	32
Ditto ditto modified	26
Ditto ditto without effect	42
	100

Re-vaccinated, with success	34
Ditto modified	25
Ditto without effect	41
	100

If vaccination lost its saving energy in the manner that has been imagined from the results of the re-vaccinations on the Continent, we should have had corresponding proofs in our own country. We have seen small-pox spreading very generally in towns and districts where vaccination has been performed more or less extensively for nearly forty years; and although re-vaccination has been very partially employed, such persons have perfectly resisted small-pox, which certainly could not have been the case, had the prophylactic powers of vaccination decayed, as has been asserted.

The reports from the gentlemen who have communicated with us on this branch of the subject are neither numerous nor conclusive. The experience, therefore, of this country can have little weight in

the argument. We are sorry, at the same time, to observe that the statements from the Continent are of a very contradictory nature. In Germany, thirty-seven out of one hundred re-vaccinations are said to have been successful. According to the report from the French Institute, twenty thousand out of forty-four thousand succeeded. This latter statement is at variance with the assertions of Monsieur Rochoux, who says that Monsieur Baudelocque succeeded only once in a hundred and twenty-five times, and Monsieur Geradin once in eleven times.

Mr. Hutchinson, of the Foundling Hospital, tells us that of two hundred and sixteen re-vaccinations only eleven were successful. One hundred and twenty-two were spurious, and in eighty-three cases no effect at all was produced. It is quite manifest that inferences from such conflicting statements must be extremely inaccurate. We do not pretend to decide on what has occurred in foreign countries. We will only observe, that unless better data are afforded for measuring the precise period when vaccine protection becomes extinct, than have hitherto been presented to us, we are bound to say that they ought not to be relied on. Are not all these difficulties and contrarieties likely to disappear, when it is universally understood that the vaccine disease is a true small-pox, and that both it and human small-pox are governed in their essential qualities by the same laws?

Upon the whole, we are of opinion that re-vaccination can only be required where doubts are entertained of the correctness of the first vaccina-

tion. This is also the decision of most of our correspondents who mention the subject. In reference to this point, Dr. Kendrick, of Warrington, says, "that inasmuch as cases of modified small-pox have occasionally occurred in a few weeks after well ascertained vaccination, the pratice of re-vaccination is superfluous, and in some cases may have proved injurious."

Systematic re-vaccinations appear to us uncalled for, and liable to several objections, which we will now briefly state. In the first place, the practice implies that the virtues of cow small-pox are less permanent than we believe them to be; and now that this point has been freed from all ambiguity, we are not inclined to do any thing to shake the confidence which must ultimately spring from right views of this subject. In the next place, it is probable, if re-vaccination be looked upon as essential, that less attention may be paid to the first vaccination than it demands, persons believing that all imperfections may be rectified by the subsequent operation. Now, as we are firmly convinced that incomplete vaccination has been the cause of a large proportion of failures, we cannot help dreading that defects of this kind, which it is so needful to remedy, might become more frequent than they are at present.

We might dwell at much greater length on this subject, by referring to the experiments conducted in various parts of the Continent. The authors of them take for granted an essential difference between cow-pox and small-pox. Some of their cases we have already mentioned as affording a

marked contradiction to this idea, and have brought them forward to corroborate the demonstration of the identity of the two affections, and the analogies which subsist between them.

STATE OF THE POPULATION WITH REGARD TO SMALL-POX AND VACCINATION: SUGGESTIONS FOR RESTRAINING THE FORMER AND PROMOTING THE LATTER.

Our returns on these heads are very far from being so complete as we could desire. We cannot, therefore, say what proportion of deaths has arisen from small-pox during the last year; nor are we able to give any thing like an accurate estimate of the number of children that are left unprotected by neglect of vaccination. By looking, however, at the population returns, and contrasting the former mortality from small-pox with the greatest that has been known to occur since the general adoption of vaccination, the value of that practice is rendered very apparent. In Great Britain and Ireland, between forty and fifty thousand were supposed to perish annually from small-pox; and if we take into account the vast increase of the numbers of the people, probably eighty thousand or more would now fall a prey to it, were it not controuled by the agency of this life-preserving power. In London alone, where, on an average, between two and three thousand perished annually, the deaths in 1827 amounted to only two hundred and seventy-seven; and last year, though the small-pox was peculiarly fatal, the deaths were seven hundred and eighty-eight. This certainly is a very large num-

ber, and we feel assured that it might have been much reduced by cautious and extended vaccinations.

Since the preceding remarks were written, the Registrar General of Births, Deaths, and Marriages, has kindly transmitted to us a copy of his first Annual Report. Among a great quantity of very valuable information, we find some facts which could not have been obtained from any other source. In the half-year ending on the 31st of December, 1837, one hundred and forty-one thousand six hundred and seven deaths were registered in England and Wales. Of these, five thousand eight hundred and eleven were occasioned by small-pox. The disease was epidemic, particularly in Liverpool, Bath, and Exeter. Of one thousand and fifty-six deaths registered in Bath, Liverpool, Exeter, parts of Shropshire, Worcestershire, and the Metropolis, eight hundred and eighty-seven occurred under the age of four years; ninety-nine between five and nine; fifteen between ten and fourteen; eighteen between fifteen and nineteen; twenty-nine between twenty and twenty-nine; five between thirty and thirty-nine; two between forty and forty-nine; one between fifty and fifty-nine. This specification, it is added, may be considered as an approximation to the ages of the five thousand eight hundred and eleven; and it is inferred that the majority of this number had never been vaccinated, as so large a proportion of deaths occurred among the very young; and it is known that the poorer classes, if they do not neglect vaccination altogether, often defer it for years. Our returns fully

verify this view of the question, as the number of deaths by small-pox after vaccination, recorded by all our correspondents, exclusive of those from London, is very small indeed. We have extracted from the tables an account of small-pox as it appeared in different districts, from July 1st to Dec. 31st, 1837, both inclusive. This table gives the population of each district, and shows at once the localities where the disease was most prevalent and fatal. Could we at the same time have ascertained with precision the exact number of persons vaccinated in each of the several districts, we could better have determined the connexion between the prevalence of small-pox and the neglect of vaccination.

Population of	Census of 1831.	Deaths from Small-pox.
England and Wales	13,897,187	5811
Parts of Middlesex, Surry, and Kent	1,594,890	763
Manchester and Salford	236,935	141
Liverpool and West Derby	218,233	634
Leeds	135,581	15
Birmingham	110,914	89
Middlesex (part of), Hertfordshire, Buckinghamshire, and Bedfordshire	515,893	292
Kent, Surry (part of), Sussex, Hampshire and Berkshire	1,351,236	282
Dorsetshire and Wiltshire	373,797	236
Devonshire	503,118	476
Cornwall	304,785	123
Somersetshire	415 252	310
Essex	304,315	20
Norfolk and Suffolk	682,788	64
Cambridgeshire, Huntingdonshire, and Southern parts of Lincolnshire	311,714	25
Lincolnshire (Northern parts of), Rutlandshire, Derbyshire, Nottinghamshire, Leicestershire, and Northamptonshire	1,045,133	244
Oxfordshire, Gloucestershire, Worcestershire (except Dudley), and Warwickshire (except Birmingham)	977,108	320

Population of	Census of 1831.	Deaths from Small-pox.
Mining parts of Staffordshire, Shropshire, and Worcestershire,	223,457	242
Cheshire, Shropshire, and Staffordshire, except mining districts	721,555	253
Lancashire, South of Morecambe Bay, except Liverpool and Manchester	905,501	352
West Riding of Yorkshire, except Northern part thereof, and Leeds	773,254	152
City and Ainsty of the City and East Riding of the County of York	199,515	10
Durham and North Riding of Yorkshire, with part of West Riding	319,042	22
Mining parts of Northumberland and Durham	318,941	91
Cumberland and Westmoreland, with parts of Lancashire and Northumberland	338,273	86
Wales, Monmouthshire, and Herefordshire	1,016,219	564

From these tables we learn the most distressing fact that there are only four diseases more fatal than the small-pox. Nearly six thousand perished in England and Wales in six months; and if the same rate of mortality existed in Ireland and Scotland, at least ten thousand victims might be counted within that period.

We do not learn that small-pox inoculation is habitually practised, with one or two exceptions, by any regular professional gentleman throughout the kingdom. This most gratifying fact irresistibly proclaims the unshaken confidence of the profession at large in the virtue of vaccination. We have witnessed some indications of an opposite spirit, but the unbiassed and disinterested voice of our brethren rebukes and disowns it. They admit, as we have already stated, that unlooked-for disasters have occurred, but these have not extinguished the evidence of a contrary nature, nor allowed them to hesitate respecting the inestimable value of this precious boon.

We have, however, ascertained that the destructive practice, which all respectable medical men now decline, is taken up by obscure, ignorant, and mercenary persons, who do not scruple to introduce the contagion when required to do so; and from such sources a great mortality has arisen in many districts. We have in another place expressed our opinion that the attention of the Legislature should be especially drawn to this subject, and a petition to Parliament which we are about to suggest, contains a clause directed to that object.

We find likewise that the prejudices of the poor are promoted and cherished by these avaricious and unworthy individuals. The consequence is, that vaccination is often contemned and rejected till the variolous epidemic shows itself, and when hundreds are swept away, the survivors are induced to take shelter under the vaccine shield which they had formerly despised. From the whole of our enquiries on these heads, we have come to the conclusion that small-pox inoculation is not restrained and regulated as it ought to be, nor is vaccination offered to the poor in the manner that their necessities and the safety of the community require.

According to our returns, the places in which small-pox was most prevalent last year, were Exeter, Manchester, Hereford, and Wrexham.

During the whole of this period, as we are informed by Dr. Shapter, the small-pox made extensive ravages at Exeter and in its neighbourhood, the cases in general were more than usually fatal, not less than five hundred having fallen victims to it. Nearly all these took the infection in the natural

way. A few cases are reported to have occurred after vaccination, but it is said, not more than one in twenty, and not a single death. The same gentleman ascribes many of these failures to imperfect vaccination, and he reports two cases of small-pox after small-pox. In Hereford we are told of twenty-five deaths from small-pox during the same period, but it is also mentioned that not one of the sufferers had been vaccinated. In Wrexham eighty-five deaths from small-pox were registered, but not a single death occurred after vaccination. Mr. Griffiths, who sends us this report, announces that he has seen two cases of small-pox occurring a second time, both proving fatal. Dr. Holland, of Manchester, tells us of nineteen deaths from small-pox in eight months, out of a population of about thirty thousand. Mr. Goolden, of Maidenhead, gives a return of forty-four deaths in two Unions, consisting of eight parishes; the first of which Unions, viz., Cookham, furnished twenty-eight, all accurately investigated, and not one found to have arisen after vaccination.

The cases above specified, if we except those from London, elsewhere noticed, are the most remarkable in point of numbers, many of our correspondents only mentioning one or two deaths, others stating several in general terms, but a very large proportion saying that they have seen none. We have already pointed to the Isle of Wight as an illustration of the latter truth, but perhaps a better may be drawn from the experience of several parishes in the vicinity of Cheltenham. Small-pox visits the latter town, with more or less severity, annually;

but from these parishes it has been excluded for many years. All the children are carefully vaccinated, and small-pox has been most efficiently controuled.

With regard to the general diffusion of small-pox, we would observe that this calamity is in no wise to be ascribed to the failure of vaccination. On the contrary, from the evidence before us, we may affirm that it has rather arisen from the greater prevalence of natural small-pox among the unvaccinated persons. In former times an evil of this kind was met by the seclusion of the infected subject in the workhouse or the pest house, which was for the most part followed by a general inoculation. It is not so now: small-pox has been kept at a distance,—the fears of the people have been thereby lulled,—and when it suddenly breaks out in a neighbourhood, it carries off hundreds,—the whole of the infantile poor population being in many places unprotected.

If, while an uncontrouled epidemic of this malignity is raging, more frequent examples of the modified affection after cow small-pox should occur, considering the great increase of population, and of the numbers vaccinated, these failures would not necessarily prove the diminution of the protecting power.

This leads us to the consideration of the provision made for the vaccination of the poor in the different country parts of the kingdom. In all cities or towns where infirmaries and dispensaries are established, gratuitous vaccination is offered, and a large number of private practitioners in like manner tender their services. Notwithstanding these efforts on the part of the profession, a very great proportion of poor

remain unvaccinated. We shall elsewhere suggest a remedy for this evil. Some may imagine that difficulties might arise from the unwillingness of parents to submit their children to vaccination. A large proportion of our correspondents inform us that this obstacle does not in many cases exist; and we think that when the real nature of this affection is explained, as doubtless it henceforth will be, all opposition will cease; we must at the same time admit that the prejudices are strong. At Collumpton, according to Mr. Maunder, small-pox inoculation is extensively practised, and it is difficult to get the people to submit to vaccination, they generally preferring (to use their own expression) "*the real thing*." Mr. Fox, of Cerne Abbas, tells us that, in a multitude of instances, the poor prefer paying from sixpence to two shillings per head for small-pox inoculation. His neighbourhood is visited periodically by small-pox inoculators. Last year they had a dissenting preacher, a blacksmith, a miller, and an old woman, all taking up this murderous trade; and can it be surprising that there were upwards of three hundred cases of small-pox? Yet under circumstances so unfavourable, he adds, "I have not seen many cases of small-pox after vaccination, and only four within the last year."

The establishment of a regular system of vaccination is called for on other grounds. Formerly the parish surgeon received a small remuneration for this service. In a majority of instances we believe that this laudable practice has been abandoned, some Unions allowing a reduced payment for vaccination, others including it in the wretched

annual allowance for which they bargain with their medical officer. The evil effects of this system are likely to be very severely felt; and a practice which it might be supposed every friend to humanity would be eager to promote, has actually been discountenanced; at least we are told that in one Union, namely, that of Debenham, the medical gentlemen generously performed gratuitous vaccination, "any remuneration being denied by the Poor Law Commissioners."

Both the Army and Navy of Great Britain very early partook of the benefits of vaccination, and from that period to the present time, it has been conducted with great regularity and effect. Every recruit, on joining his regiment, is carefully examined, and, unless it is satisfactorily shown that he has had either small-pox or cow-pox, he is immediately vaccinated. The same vigilance is observed both with respect to sailors and marines. In these services the appearance of the cicatrix is a good deal relied upon; and whenever it is deficient, or of an irregular character, the party is subjected to vaccination. We have been favoured with communications from Sir James M'c Gregor and Sir William Burnett, the heads of these departments. Sir William has transmitted to us a copy of a Report upon the Small-pox as it appeared in two of her majesty's ships, namely, the Phaeton and Hastings, in 1825 and in 1836. On board the Phaeton there were eighteen cases of small-pox, ten of which occurred to vaccinated, and three to unvaccinated persons; three others had neither had small-pox nor cow-pox, and two were under vaccination; out

of the whole of these, three died, one of whom had neither had small-pox nor cow-pox ; the remaining individual was under vaccination. On board the Hastings forty cases of small-pox took place. This vessel was in the Tagus. Thirty-seven of those affected, were vaccinated persons; three were unvaccinated. Of the whole number two died, one of whom was unvaccinated, and the other uncertain. Sir William states that this is the only ship in the navy, in which small-pox has recently appeared. When we consider how often, in former times, our fleets and armies were disabled by this dreadful pestilence, we cannot but feel satisfaction on knowing that it has been entirely controuled by Jenner's discovery. The late Duke of York, very soon after its promulgation, issued that order for the vaccination of the army which is still in force; and, a very short time afterwards, a similar mandate proceeded from Earl Spencer, the first Lord of the Admiralty, at the suggestion of the late Sir Gilbert Blane. It ought also to be remembered, that the medical officers of the navy most generously marked their value of the new practice, by directing a gold medal to be struck, commemorative of that event, which was presented to Jenner in the year 1801.

The returns from the surgeons of the marines stationed at Woolwich, Chatham, Portsmouth, and Plymouth, require a short notice. At Woolwich, we learn from Mr. Parkin, that from 1822 to 1838, inclusive, five hundred and seventeen persons were vaccinated. In that period the number of cases of small-pox after vaccination appears to have averaged

about three in two years. At Chatham, Mr. Rae mentions that from 1817 to 1838, one thousand eight hundred and eighty-nine had received vaccination. In that period seventy-one cases of small-pox had taken place; of these, very few were after vaccination, and they were generally of a modified nature. At Plymouth, according to Mr. Ryall, two thousand one hundred and ninety-three were vaccinated from 1827 to 1838; he mentions a very few cases of small-pox after vaccination, but the proportion is unknown. Mr. Quarrier, of Portsmouth, reports that three hundred have been vaccinated in each year from 1831 to 1837; but in the year 1837–1838, owing to the prevalence of small-pox, four hundred were vaccinated. No cases of small-pox after vaccination happened among their own vaccinated men, women, or children; but some occurred where the mark appeared satisfactory upon enlistment, but much modified.

The state of small-pox and vaccination in several countries of the Continent to which we shall now briefly advert, will tend to strengthen the suggestions that we mean to offer respecting the management of the practice in England.

In a very valuable paper, published by M. Hoffman, Director of the Statistical Bureau of Berlin, comprising an account of the births and deaths in the Prussian States, from the year 1820 to the year 1834, we have some interesting information. The bills of mortality contain a separate entry of the deaths which have arisen from small-pox. It is asserted, however, that these entries have been very inaccurate, many deaths which arose from other

cutaneous diseases having been attributed to small-pox. The table given by Hoffman, though in this respect incorrect, serves, however, as an indication of the limits beyond which the fatal effects of this malady do not extend. On an average, he observes, there were in one million of deaths, even according to this table, only eight thousand one hundred and ninety-one caused by the small-pox, i.e., one in one hundred and twenty-two; and it is very probable that the correct number was considerably less. The last three years present an increase in the numbers. On an average, in one million of the whole deaths, there died of small-pox—

Between the years	1820–22	6,152
.....	1823–25	6,216
.....	1826–28	6,774
... .	1829–31	5,763
.....	1832–34	14,791

M. Hoffman nowhere intimates that this increase of mortality from small-pox arose from any failure in the powers of vaccination, not one fatal case after vaccination being recorded; we are entitled, therefore, to infer that the mortality was among those who had neither had small-pox nor cow-pox. From the above table it appears that even in these last three years, the small-pox occasioned only one in sixty-eight of the aggregate deaths. He then adds, the destructive agency of this contagion, which once occasioned such devastation, is now, then, even in the period of its greatest prevalence, exceedingly diminished.

Mr. Dodd, one of the Secretaries, before the appointment of the Section, sent several questions

to Doctor Otto of Copenhagen, Doctor Hecker of Berlin, and Doctor Holst of Christiana in Norway. The object of these questions was to ascertain the methods enforced by the governments of these countries for diffusing the practice of vaccination among their people, and likewise the estimation in which the practice is held.

In Denmark, vaccination is performed gratuitously by the parish surgeons and physicians; but in Copenhagen, an institution is supported by the King, the physician receiving a salary, and being required to keep up a supply of lymph for the provinces. The practice of vaccination is enforced by law, as no person can be confirmed or marry without a certificate of its having been undergone. The system is very complete in this country, and has been steadily acted upon from the beginning. The strictest registration of all vaccinated persons is maintained, and the rules for the operation, as well as correct representations of the genuine vesicle, are universally diffused. The practice is now confined entirely to medical men; formerly midwives and others were permitted to interfere with it. Inoculation with the small-pox is entirely prohibited. Doctor Otto farther states that vaccination is considered to afford protection for a period, varying from five to eight years; that re-vaccination has become frequent, and that as yet there have been no instances of re-vaccinated persons becoming infected with the small-pox. The lymph employed, until two years ago, was that received from Doctor Jenner in 1800. Nothing is said of this lymph having become deteriorated. In 1835 a fresh supply was obtained from a cow in Holstein.

In Prussia the most effective provisions have likewise been adopted by Government. The largest institution for vaccination is in Berlin; it is under the direction of Doctor Bremer, who has a salary; he vaccinates all who come, gratuitously; and supplies lymph to any medical man in the kingdom who requires it of him. There is a similar institution at Breslau. In the country a very complete system has likewise been enforced. The whole kingdom is divided into governments, and each government into circles or districts. Each district has a judge or state councillor, who is necessarily well informed respecting the population and local affairs; and with him the district doctor is associated as medical commissioner. Each district is sub-divided; to each sub-division a vaccinator is appointed. Days are fixed when parents and their children ready to be vaccinated, who are known by reference to the population lists, are required to attend. The vaccinator keeps a journal, re-examines at proper times, and makes out official returns, which are sent to the government at Berlin. All other medical men give in a list of their vaccinations to the district doctor.

None but licensed practitioners are permitted to vaccinate, and these gentlemen are required to show, in their public examinations, that they are well acquainted with the practice. Small-pox inoculation is unconditionally and strictly forbidden. Doctor Hecker further observes, that vaccination, notwithstanding the recent appearance of the varioloid epidemics, every where obtains unbounded confidence, and whenever the small-pox shows itself,

re-vaccination is adopted. All recruits, without exception, are re-vaccinated on entering the army; and a third part of the whole army once every year. Since this has been done, small-pox has been unknown among the soldiers. The lymph has been occasionally renewed when an opportunity offered; but as the disease is rare among cows in Prussia, such opportunities are not of frequent occurrence. The general opinion is, however, that the lymph from the cow acts more intensely than that which has been long in use.

The information conveyed by Dr. Holst respecting the state of vaccination in Norway, corresponds very much with that delivered above. In 1800, a royal ordinance was issued, commanding all medical men to endeavour to diffuse the practice of vaccination. Midwives and other properly instructed persons were also authorised to perform it. Re-vaccination is not yet ordained by law, but it has (especially during epidemics of variola,) been frequently used, and apparently with good effect. Inoculation for small-pox is strictly forbidden: a medical man convicted of following this practice, loses his right to exercise his profession; and if he is a public officer, forfeits his situation. Dr. Holst concludes by saying that, although many vaccinated persons have been attacked by small-pox or the varioloid during the last fifteen or sixteen years, the medical men of Norway, as well as the public at large, highly estimate vaccination as prophylactic in the majority of instances, and modifying and mitigating in others. It is farther said that the vaccine virus is renewed every year, the cows in those districts where the disease prevails

in different parts of Europe supplying them with fresh lymph.

We have very recently received a letter from Dr. Gregory, at Paris, giving us a sketch of the state of vaccination in France. We will mention two or three of the most interesting particulars, regretting that the limits of this report will not permit us to do more. He calculates that not more than from fifteen hundred to two thousand are vaccinated yearly at the Central Station at Paris. There is a medical officer attached to each of the twelve arrondissements, whose business it is to vaccinate the poor. Monsieur Bousquet, the Superintendant Vaccinator, calculates that ninety per cent of the children born in Paris, are vaccinated; but the proportion in the provinces is thought to be not more than twenty-five per cent. Vaccine capillary tubes are employed, which Dr. Gregory thinks a great improvement on the English practice. The lymph employed is chiefly that obtained from the cow at Passy, a village in the vicinity of Paris. Some of the original matter supplied by Doctor Woodville is also in use.

It will be manifest from all that we have said, that England has by no means reaped the benefit that might be derived from a more perfect system of vaccination than has yet been practised. There are two measures arising out of this enquiry, which we think the Association might with great propriety recommend to the attention of the legislature.

The first regards the regulation of the practice of small-pox inoculation.

The second points exclusively to the diffusion of correct vaccination in every district of the kingdom.

On each of these heads we shall offer a few remarks, which will show that the plan we propose is easy of execution, and may be made the subject of legislation without in any degree interfering with prejudices which still unhappily stand in the way of more positive enactments.

It is well known that the exposure of a person labouring under a contagious disease is at present an offence at common law, and punishable by fine and imprisonment. Several convictions have of late years been obtained in consequence of the violation of this law by persons affected with small-pox; but the actual practice of small-pox inoculation does not incur any punishment, though it certainly ought to do so. Now, it has been shown that the diffusion of small-pox epidemically in many districts, may be distinctly traced to individuals not connected with our profession, who have taken up the small-pox lancet, reckless of the consequences, and have thus disseminated the contagion to a most alarming extent. Such persons, we think, ought to be restrained. We therefore propose that the legislature should be petitioned again to declare that individuals labouring under small-pox shall not, under any circumstances, be exposed in such manner as to lead to the dissemination of the disease; and, moreover, that none but a regularly educated medical man be permitted to inoculate for small-pox, and that he likewise shall be liable to all the penalties which may attach to the infringement of the statute touching the incautious exposure of persons labouring under the disease.

If such enactments were passed, they would certainly very much diminish the diffusion of small-pox by inoculation ; they would impose no unnecessary restraint upon individuals; and, it might be thought, would meet with no opposition from the legislature.

To render the benefits derivable from them complete, some measures for the more perfect practice and diffusion of vaccination are loudly called for. We would, therefore, recommend that epizootic diseases, and the history and character of the *variolæ vaccinæ*, should be made subjects of particular instruction and investigation in every school of medicine throughout the kingdom ; and that candidates for degrees in medicine and surgery should be specially examined in this branch of professional knowledge, and that they should likewise have opportunities of practically witnessing and understanding all the instructions they may receive from their teachers. How much soever this branch of professional education may have been neglected, we are called upon to declare that there is no one more interesting, whether considered in its historical and literary character, or in the far more momentous influence which it has upon the lives of mankind.

Should these objects be attained, we would propose that duly qualified vaccinators should be appointed for every district in the kingdom, whose main duty should be, at certain seasons, to offer gratuitous vaccination to the poor of every hamlet and village or parish within their respective bounds. The stations and days and hours for vaccination might be fixed, and also the times for inspecting the progress of the affection. Registers, accurately

constructed, would show every circumstance connected with perfect or imperfect vaccination, which could always be referred to on any future occasion when small-pox made its appearance in the neighbourhood. In this manner the qualities of the *variolæ vaccinæ* would be ascertained in a manner more accurate than they have hitherto been; there would be some security for regular and efficient practice; and we should then know in how many cases and at what period it lost its protecting power.

Another duty of considerable moment might easily be attached to the offices of these public vaccinators. Living in rural districts, and instructed in the diseases of the inferior animals, they might take advantage of the appearance of the *variolæ*, either among cows or horses, and procure fresh supplies of lymph when such should be required; or they might perform such experiments as have been successfully conducted by Mr. Ceely for the renewal of the disease. With a set of well-appointed officers of this kind, small-pox could never long prevail in any district. We have found that when it shows itself in a formidable way, individuals, formerly averse to vaccination, gladly avail themselves of its protection. At such times a competent and skilful vaccinator who would offer his gratuitous services, and prove their value by manifesting the unquestionable powers of that practice, would be hailed as a deliverer.

It is not without good cause that we offer these suggestions. We have very strong statements from many of our correspondents respecting the unprotected state of the poor, especially since the new

poor-law came into operation. The Association is too well acquainted with the bearing of that statute upon the medical relief provided for the pauper, to require us to dwell upon any other part of the subject than that which we have immediately in hand. Formerly a moderate and just allowance was made to the parish surgeon for vaccination. In many cases that allowance is either withheld entirely, or so much diminished in value as to cause a very unfortunate neglect of this salutary practice. One gentleman in Cambridgeshire tells us that he had practised thirty-eight years. He seldom passed two years without vaccinating the whole parish: the consequence was, that small-pox was scarcely known, and the mortality as trifling perhaps as in any other place of its size in England. The Guardians of the Poor now only allow an insufficient remuneration, and he therefore infers that vaccination will be neglected, and that should small-pox appear in such districts, he significantly adds, the cost of coffins alone will be a heavier charge upon the parishes than would have been incurred by paying a proper remuneration to the surgeon for averting this calamity by vaccine inoculation. Dr. Jenner himself found this very argument (viz., the cost of coffins,) influential in driving certain parishes in the neighbourhood of Cheltenham to seek for vaccination. We have another illustration of the evil effects of the system to which we have alluded, communicated to us by Dr. Davis, of Presteign. When the small-pox broke out in that town last autumn, it was found that the whole of the poor population under nine or ten years of age were

entirely unprotected. This cannot of course be entirely ascribed to the new poor-laws; they must bear the blame merely for the time they have been in operation. In either case our argument is made good, namely, that it is the duty of the State to provide for the more efficient vaccination of the poor.

Another of our correspondents, Dr. Lynn, of Woodbridge, is so fully impressed with this view of the subject, that he concludes his report by observing that if medical gentlemen were properly remunerated for vaccinating the poor, we should, at the end of twelve months, seldom hear of a case of small-pox. What has been just advanced is applicable to every district in the kingdom. We know of instances in which private liberality supplies the place of public duty. There the parishes are systematically and regularly vaccinated, and the result is that small-pox is unknown.

From the character of the preceding remarks, it must be apparent that our brethren have not left us in doubt concerning their opinions of the virtues of vaccination. At the commencement of our investigation we were not without apprehension that the replies might prove less favourable than we have found them. Nothing in our own experience justified this fear, but rumours, loud and widely diffused, caused us to look for much more painful results than we have encountered. The general prevalence of small-pox in any district, has been too often supposed to indicate a decay in the protecting influence of vaccination. This idea, too easily taken up, and injudiciously propagated, has tended to confirm the prejudices which we hope may be removed.

We believe that in every situation where small-pox has recently existed in an alarming degree, vaccination has been neglected. Probably no city in Europe suffered more from this scourge than Glasgow. Before the introduction of vaccination, it is calculated that it caused one in three of the deaths under ten years of age. Immediately after the general employment of cow-pox inoculation, the mortality became comparatively trifling. During the years 1835 and 1836, there was a very great increase of deaths from small-pox. Doctor Cowan, from whose work these particulars are extracted, affirms that this increase is not to be attributed to the failure of vaccination, but to the neglect of it.

During the year 1836, he treated ninety-six cases in the hospital. Twenty-six were fatal; but no death occurred in any individual who presented the appearance of having been properly vaccinated. Another fact demands our attention. On an average thirty per cent of the admissions into the hospital consisted of Irish, but of ninety-six cases of small-pox, only four took place among that people: when we consider their poverty and their habits of life, existing in the middle of a pestilential atmosphere as they must have done, this immunity is the more remarkable, and is ascribed by Dr. Cowan to the efficient system of vaccination carried on by the surgeons of the county and other dispensaries in Ireland.

We have introduced this incident in this place for the purpose of proving by a strong contrast what we believe will universally be found to be the

case, namely, that when failures are very common, the fault lies not in vaccination itself, but in the manner of conducting the practice. In this particular a very large majority of our correspondents concur. "There is but one opinion, that properly performed it is a most powerful preservative."—"When perfect it is an unlimited protection."—"It is as good a security as small-pox inoculation."—"Confidence is as high as ever."—"Unshaken."—"Increased confidence."—"It is highly thought of by all classes."—"Carefully performed and watched it is an admirable protection."—"No diminution of confidence to any extent, either public or professional."—"Confidence unbounded and unshaken." Such are a few of the replies with which our enquiries have been greeted by gentlemen of longest standing in the profession, some of whom have been in practice for half a century. It is true that others of our correspondents have told us that their confidence is shaken; one says that "he has none;" another that "he has nearly lost it;" and a third "that he is puzzled."

We cite these in obedience to the principle laid down in the outset of our Report, but we have great pleasure in being able to state that they are infinitely outweighed by the great mass of testimony of an opposite nature.

The investigation in which we have been engaged, has brought before us every question connected either with the theory or practice of vaccination. The history of the discovery, the doctrines of the discoverer, and the directions which he delivered

for the successful diffusion of the practice, have all in turn occupied our attention. We have likewise been called upon to compare these doctrines and these directions with the experience of later times; and what has been the result? a firm and well founded conviction of the accuracy of the investigations of Dr. Jenner, and an increased reliance on the soundness of his principles, and the matchless skill and perseverance which enabled him to publish his enquiry in a state of completeness and efficiency, unexampled in the case of any preceding professional investigation. In no instance have his opinions been successfully combated; and his very conjectures, like some of the bright anticipations of other illustrious men, have been stamped with the permanent characters of scientific truth. The name he gave the disease, which was the subject of his anxious research, affords one illustration of this remark. The term *variolæ vaccinæ*, as we remarked at the outset, involves in its meaning the entire theory of its prophylactic power, as well as of its medical and literary history. The latter part of the subject has now received ample confirmation, and when the whole is duly weighed, as doubtless now it will be, it will show that his expectations of permanent benefit from the substitution of a mild for a malignant disease rested on an imperishable basis. Again, his opinion that the horse was an animal liable to an affection similar in its protecting power to that derived from the cow, though at first treated as a wild and crude imagination, has at length come forth with all the strength of demonstration.

We have now to say a few words on the wisdom which dictated his directions for the propagation of the disease. Considering the newness of the subject, and the extraordinary results that were anticipated, contradictions and obscurities might have marked the infancy of the practice. But it was not so in the present instance. The character of the vesicle, its first appearance, its subsequent progress, its deviations from a healthy condition, the aspect of the areola, the purity of the lymph, and the time and manner of its insertion so as to secure the perfect development of the affection, these, and all other particulars connected with the successful employment of this life-preserving agent, were deduced from his matured and well digested investigations with a degree of precision and perfection from which future observations have taken nothing away, and to which they have added but little.

We think it right not to allow this opportunity to escape without insisting upon these points. We do it not merely for the purpose of eulogizing Jenner, but because they are intimately connected with every part of our labours; and almost all the suggestions which we have delivered, necessarily carry us back to that patient, and wise, and enlightened mind from which the practice arose.

It well becomes us, therefore, emphatically to mark these things. Jenner, during his life-time, had a hard measure dealt out to him. His whole existence was one continued struggle to uphold and disseminate what he felt and knew to be truth; and it is unquestionable that most of the anomalies and difficulties which have marred and obscured the

practice of vaccination, may be traced to the errors of those who distrusted his doctrines, and disregarded his precepts. We rejoice to have such an occasion as the present to express this our deliberate conviction, and to declare in the face of this Association how thankfully and gratefully we offer this tribute to the genius and virtue of so great a benefactor of his race.

JOHN BARON, M.D.,
Chairman.

Cheltenham,
July 20, 1839.

ARTICLE II.

THE RETROSPECTIVE ADDRESS

DELIVERED AT THE

SEVENTH ANNIVERSARY MEETING

OF THE

PROVINCIAL

MEDICAL AND SURGICAL ASSOCIATION,

HELD AT LIVERPOOL, JULY 24th and 25th, 1839,

BY JOHN ADDINGTON SYMONDS, M.D.,

Senior Physician to the Bristol General Hospital, Lecturer on the Practice of Medicine, &c. &c.

To trace the first beginnings of knowledge upon a given subject—to recount the successive additions to it through long periods of time—to separate those which had a real and lasting value from those of which the worth was but transient and adventitious—to discriminate what was actually observed from what was only thought of—to record the rise, decline, and fall of theoretical dynasties which maintained a long tyranny over the human mind—to tell how glimpses of great truths were caught for a moment, and then lost sight of for ages, till there

arose some surpassing intellect capable not only of observing them more distinctly, but of fixing them, as it were, in the firmament of knowledge—to distinguish the same essential and immutable principles disguised by various names in various times—to mark the influence received from this particular science from other sciences, or to thread its entangled connections with false religion and false philosphy; above all, to survey its applications to the wants and happiness of mankind, and to show how, amidst the alternations of success and failure, the *art* has still advanced, though not at equal paces with the *science*—to pursue these, and a host of equally difficult inquiries, is the gigantic task of him who attempts the history of such a science as medicine. Happy is it for me that such is not the duty which has devolved upon me on the present occasion. Happily I am but the annalist, not the historian of medicine, and the annalist but for one year. Yet, although I have endeavoured to gather confidence and courage, by setting before my mind the arduous undertaking of a general historical survey of medicine in contrast with the duty of inditing its chronicles for a very limited period, I cannot but perceive that even the latter task is more than a match for the slight abilities that I can bring to it.

"Materiâ vires exsuperante meas."

True the past year has not been peculiarly remarkable for the magnitude and splendour of its events; it has not been an *annus mirabilis;* I have not to commemorate any grand invention in the art of cure from which a new era might be dated, nor

the development of any wide embracing principles or laws which are to bind in indissoluble union facts hitherto isolated or but partially connected; yet, in these days of industrious research, if not of brilliant speculation, there is much to recount—no paucity of materials for the year's narrative; but, on the contrary, such a multiplicity of valuable additions to our information, that to enumerate them *all* were impossible, and to select *some* for particular mention, when all are so worthy, and but few distinguished above the rest, is a work of considerable difficulty. It is fortunate for me that one great division of the subject, that of surgery, has been committed to other hands; to one whose own labours have contributed to that sum of knowledge of which he has so ably recorded the more recent augmentations.

On many points I feel that I shall need the indulgent consideration of this distinguished audience, but on two especially: for I doubt not it will appear that I have overlooked some of the recent acquisitions of our science; while, on the other hand, I shall incur the risk of presenting to your notice topics that may seem trite and familiar. The former danger can scarcely be avoided, because, in the process of selection, subjects appear invested with different degrees of interest to different observers; and the latter difficulty is rendered almost inevitable by the activity of our journalists, through whose praiseworthy exertions in diffusing the most recent information, nothing like a novelty in medicine can long retain this character. My choice of subjects will be mainly guided by two considerations; first, as to the departments of medical science,

in which there is at present most *progression*, or, at all events, most *movement;* and secondly, as to their utility or practical bearing.

I shall first notice some of the more recent researches in anatomy and physiology.

The structure of the *teeth* has received much attention in this country during the past year. I need not remind my hearers of the interesting discoveries which have been made within the last four or five years by Retzius of Stockholm, as well as by certain German anatomists.* I shall confine my notices of the researches on this subject to the period which more properly belongs to my survey.

A memoir was read by Professor Owen in the Medical Section of the British Association, at Newcastle, confirmatory of the observations of Pürkinje, Müller, and Retzius, on the tubular structure of these organs; and illustrating, by his own investigations, both of recent and fossil teeth, the analogy between bone and ivory. In the highly organised tooth, such as that of the human species, the analogy is difficult to recognize, because there are no Haversian canals with concentric laminæ (a structure well known to be characteristic of bone), unless the whole tooth were to be regarded as an enlarged Haversian canal, and its calcigerous tubes as corresponding to the tubes in the concentric laminæ of bone: but in lower animals the analogy is easily traced. Professor Owen particularly directed attention to the tooth of the *acrodus nobilis*, an extinct species of cartilaginous fish, in which Haversian canals may be traced in considerable numbers. The formation of these

* Pürkinje, Müller, Raschkow.

canals has been observed in the development of recent cartilaginous fishes, in which the cavity of the pulp subdivides into a number of processes, from each of which branches are given off which anastomose with those from contiguous centres, or communicate with the calcigerous cells. Around the canals may be traced concentric laminæ, traversed by calcigerous tubes as in true bone. Some valuable practical remarks were made by the professor on the decay of teeth, which proceeds from the peripheral extremity of the fine tubules towards the main tubes, and thence to the pulp, the decay consisting essentially in the removal of the earthy particles.*

In the *Medical Gazette*,† Mr. Tomes published an excellent memoir, which was read last year before the Royal Society, and in which he maintains the vascularity of all the parts of the dental structure, even including the *crusta petrosa* and the *cæmentum*. This gentleman relates some interesting experiments in proof of the tubular nature of the fibres observed in the ivory.

A very important contribution to the anatomy of the teeth was made by Mr. Nasmyth in a paper communicated to the Medico-Chirurgical Society,‡ wherein he demonstrated the existence of a capsular covering external to the enamel, even after the completion of the tooth and its extrusion above the gums. This layer of substance appears to be continuous with the *crusta petrosa*, covering the fang,

* *Athenæum*, 1838.

† Number 585.

‡ *Lancet*, February 2, 1839.

and to be identical with the structure in which the cæmentum of compound teeth is formed. I need scarcely stop to observe that the opinion which has generally been entertained respecting the cæmentum, namely, that it is an inorganic deposit from the saliva, similar to the tartar, which often encrusts the teeth of the human subject,* must now be given up.

Since the communication just adverted to, and indeed within the last few weeks, Mr. Nasmyth has favoured the public with an admirable volume, forming the first part of his *Researches on the Development, Structure, and Diseases of the Teeth.* Besides containing an ample and well-digested summary of the earliest as well as latest investigations in this department of anatomy, it is enriched by many original observations of the author. Mr. Nasmyth appears to consider our knowledge of the so called tubular structure as very imperfect, and confesses that he is at a loss to understand how, if the tubes contain calcareous matter as Müller and Retzius suppose, they can be the means of conveying a nutritious fluid, according to the opinion of the Swedish professor. Perhaps Mr. Tomes is not far from the truth when he conceives "that the tubes, containing, as they do, an amorphous substance, could, by capillary absorption, carry on a kind of slow circulation of the more fluid parts of the blood."†

Besides the three substances of which teeth are said by Retzius to consist, viz., ivory, enamel, and cement, Mr. Nasmyth has described a fourth, which

* This is even the opinion of Müller. See *Baly's Translation of Müller's Physiology*, vol. i, p. 393.

† *Op. Cit.*

has "the appearance of ossified pulp." He states it to be as constant as any of the other three, and that it constitutes "almost exclusively the simplest teeth, as those of the ornithorynchus." Mr. Nasmyth will more fully explain his views on this subject in the sequel of his valuable work.

I observe that Professor Owen promises a complete exhibition of his researches in a work entitled *Odontography*, in which the important bearings of the subject on geological science will doubtless be amply developed. There seems good reason for believing that ere long a fragment of a tooth, sufficient to be inspected in a microscope, will enable us to recognize not only classes, but even genera of of living and extinct animals.*

As yet I have only adverted to the structure of the teeth: I must now take notice, though briefly, of an elaborate paper by Mr. Goodsir, of Anstruther, on the "Origin and Development of the Pulps and Sacs of the Human Teeth."† The most remarkable part of his researches was the discovery that the cavity containing the dental pulp is at first an open follicle, which afterwards closes up and becomes the sac which has received so much attention from anatomists. Mr. Goodsir divides dentition into three stages,—the follicular, saccular, and eruptive. In the first he includes what might be called the papillary stage, when the pulp is but a papilla on

* To those who may wish to have a condensed view of the recent odontological researches presented to them, I would recommend the perusal of an excellent article on the subject in the last number of the *British and Foreign Medical Review*, July, 1839, evidently written by one familiar with this part of anatomy.

† *Edinburgh Medical and Surgical Journal*, January, 1839.

the free surface of the mucous membrane. Mr. Goodsir appears to have made the interesting discovery of the follicular origin of the dental sacs, without being aware that Professor Arnold had ascertained this fact, as far as regards the milk teeth. But to Mr. Goodsir belongs the merit of having demonstrated a similar origin of the permanent teeth. The mode in which the latter are formed from the secondary dental groove, is extremely interesting; but I must content myself with thus directing attention to this very valuable memoir.

From the teeth, which were not long since regarded as all but inorganic bodies, we may pass by an easy transition to another structure, the vitality of which has also, till very lately, been denied or doubted: I allude to the epidermis. We may first take notice of the researches of M. Flourens. This distinguished physiologist, in a memoir presented to the Académie des Sciences last year, announced his having discovered two layers of epidermis, an inner and an outer, and that in the former is deposited the colouring matter found in the skin of the European races, such, for instance, as we observe in the areola of the mamma. The pigmentum of the dark races, however, is deposited between this layer and the dermis. M. Flourens has examined, with great care, the mucous membrane of the tongue, mouth, and œsophagus in man and other mammalia, and finds that the outer covering is a continuation of the outer layer of the epidermis; but that between this and the dermis is situated the true corpus mucosum, which, however, is not reticulated, as Malpighi supposed. This body is to the epithelium

what the inner epidermis is to the outer; it is the seat of the dark spots seen in the mouth of the ox, and occasionally of the horse. The same structure has been traced as far as the cardia in man, the first half of the stomach in the horse, and the three first stomachs of the ruminant animals. The peculiarities above indicated, M. Flourens demonstrated by means of maceration. Since this memoir M. Flourens has published* (indeed within the last two or three weeks,) his investigations respecting the mucous membrane of the small intestine, which he has also succeeded in showing by maceration to be furnished with an epidermis and a corpus mucosum,—coverings, the existence of which was denied by Glisson, Bichat, Beclard, and Meckel.

The minuter researches of Dr. Henle on epidermoidal tissue will be more conveniently considered in connection with another subject.

M. Breschet, on the 26th of November, 1838, called the attention of the Académie des Sciences to the existence of epi-sternal bones in the human species. These prominences on the uppermost part of the sternum, drawn out in a transverse direction, and flattened next the sternum, have been scarcely noticed by anatomists. They are, in the opinion of M. Breschet, the rudiments of the true first rib, and correspond to certain prominences on the seventh cervical vertebræ, near the transverse apophyses, which extend forwards, downwards, and outwards, and which, together with the rounded form of the central foramen, and the frequent absence of

* *Recherches Anatomiques sur la Structure des Membranes Muqueuses, Gastrique, et Intestinale.—Gazette Medicale de Paris*, No. xxvi., 1839.

a perforation for the vertebral artery, associate this vertebra rather with the dorsal than the cervical groupe. Meckel and Beclard had regarded these processes on the seventh cervical vertebra as vestiges of an abortive rib ; but it was reserved for M. Breschet to point out their relation to the episternal bones.

Professor Sebastian has re-discovered what was known to Haller, but has been lost sight of by later anatomists,—the venous circle of the mammary areola. This structure explains the erectile action of the nipple, which has been said to consist of erectile tissue, rather from the turgescence of which it is capable, than from an anatomical demonstration of its vascular structure. Sebastian proposes to call this structure "Haller's circle."*

Mr. Hilton has made some observations on the decussation of fibres at the junction of the medulla spinalis with the medulla oblongata, which seem to explain why, in some cases of cerebral lesion, the paralysis occurs on the same side of the body, and in others on the opposite side ; for he has satisfied himself that the decussation, whether from the columns of motion or of sensation, is partial only.†

The minute anatomy of the liver has been investigated by M. M. Dujardin and Verger, in a memoir presented to the Académie des Sciences.‡ Their description of the lobules, with reference to the hepatic veins and other vessels, corresponds with that of Mr. Kiernan. The parenchyma of the

* *British and Foreign Medical Review*, January, 1839.

† *Proceedings of the Royal Society*, No. xxxiv.

‡ October 29th, 1839.

lobules is, according to them, quite devoid of vessels or plexuses, and consists of oval or globular particles of a glutinous transparent matter, and small granules of an oily nature. These globules are so arranged as to have lacunæ between them, through which the corpuscules of the blood pass unchanged, while the serum undergoes an organic filtration, by means of which certain excrementitious particles are separated and thrown off on the surface of the lobule. This blood, which is that of the vena portæ, and is supposed to leave its vessels by exosmosis, having undergone the above action, enters the roots of the hepatic veins. The blood of the hepatic artery does not penetrate the lobule, but is distributed in finer plexuses than that of the portal veins, and most probably secretes alkaline or other matters, subservient alike to digestion and to the solution of the excrementitious matters separated from the portal blood. The bile thus formed is taken up by the fine radicles of the biliary vessels. *Se non è vero, è ben trovato.* From considering the relative capacity of the two sets of vessels, it would seem that about five-sixths of the liver are employed in hematosis or abdominal respiration, while the remaining part is a glandular organ secreting digestive fluids.

Embryology has very lately received an important contribution from M. Serres, to whom this branch of science is already much indebted. In a memoir read before the Académie des Sciences, on the 17th of last month,* M. Serres announced his discovery of a branchial apparatus of respiration

* June 17, 1839.

in the human ovum. The opinion broached by Ratké, in 1825, that certain lateral fissures observed in the neck of the human fœtus during the early periods of its existence serve the purpose of branchial respiration, cannot now be maintained, though it is quite true that such fissures exist, and that they bear a structural analogy to the branchial arches in fishes. To me the structure in question appears a striking illustration of the principle, that organs, however analogous to each other as to their anatomical elements, may perform very different functions in different systems. M. Serres first points out the cavity formed by the separation of the decidua externa and decidua reflexa, containing a fluid, the existence of which has been proved by the investigations of Breschet and Velpeau. He then proceeds to show that the decidua reflexa presents a number of perforations or sinuous openings, through which the vascular tufts of the chorion protrude, and come in contact with the fluid in the decidual cavity. The perforations of the decidua reflexa have been known to other anatomists, but no one before M. Serres had demonstrated their penetration by the chorial vessels, nor perceived the relation of these vessels to the fluid in the cavity.* This apparatus is discernible during the three first months, but when the placenta begins to be formed by the transmutation of some of the villi of the chorion, the former gradually disappears, the tufts of the chorion shrink, the decidual cavity contracts, the quantity of liquid correspondingly diminishes, the two deciduæ are brought into contact, and at

* *Gazette Medicale*, No. xxvii., 1839.

last are no longer distinguishable from each other. The remarks of M. Serres on the production of abortion by imperfection or lesion of some part of this apparatus are highly interesting, but my space will not allow me to introduce them here. Valuable as these researches are, we cannot consider them complete till the fluid in the decidual cavity has been analysed, and found to possess the qualities requisite for the respiratory process.

Among the researches in experimental physiology published during the past year, none appear to exceed in importance and trustworthiness those of Dr. J. Reid, on the functions of the eighth pair of nerves.* This gentleman has evidently taken the utmost pains to guard against the numerous fallacies which are so easily fallen into by him who observes, and still more by him who endeavours to alter the conditions of phenomena so liable to variations as vital actions.

The part which the glosso-pharyngæal takes in deglutition, is to convey impressions to the medulla oblongata, together with the branches of the fifth pair distributed on the fauces, and also with the superior laryngæals: it is not a motor nerve. The motive influence in this function is transmitted along the pharyngæal branches of the vagus, along the hypoglossal, the fifth pair, the portio dura, and the descendens noni. The superior laryngæals are mainly nerves of sensation, having a very few motor nerves distributed to the cricothyroid muscles. The inferior laryngæals are principally motor; they supply all the muscles attached to the arytænoid cartilages, and perhaps to the muscular fibres of the

* *Edinburgh Medical and Surgical Journal*, April, 1839.

trachea; they contain a few sensitive filaments distributed over the trachea and pharynx, and a very few over the larynx. Contraction of the glottis is evidently a reflex action; the superior laryngæals being the afferent nerves, and the inferior laryngæals the efferent. In the account of the effects of division of the vagi in the middle of the neck, i.e., above the origin of the recurrents, there is a curious observation bearing upon Dr. Ley's well-known theory of laryngismus stridulus. It was noticed that animals after this injury would appear to be breathing with ease, till any struggle or other muscular exertion took place, when symptoms of suffocation immediately supervened, as if the stronger inspiratory action brought on the paroxysm, by producing so powerful a current of air as to close the passive lips of the glottis. From the experiments on the *cardiac branches* of the vagus, it may be inferred that although they convey mental and other impressions from the nervous centre to the heart, yet the movement of the latter organ may be affected by such causes after the division of the vagi, and recurrents in the neck. The observations upon the degree to which the action of the respiratory muscles was influenced by *division of the vagi* are very important: the movements uniformly became slower, though at first they were performed with ease; after a time they became more laborious; but some of the animals quite recovered the effects of the operation. The changes in the lungs were carefully noted in the animals which died asphyxiated, and Dr. Reid convinced himself that they could be sufficiently accounted for by the diminished fre-

quency of the respirations, and the consequent congestion of the pulmonary vessels. Though there is good reason for believing that the impressions which excite the reflex respiratory action are chiefly conveyed to the medulla by the vagi, yet they appear to be also conveyed by the branches of the fifth pair distributed on the face. Dr. Reid wishing to observe whether the want of the *vagi* is compensated by volition, removed the cerebrum and cerebellum; but he found that the respiratory movements still continued, though greatly diminished in frequency. The observations on the *gastric* branches of the vagi were not less interesting. In several animals the muscular movements of the stomach continued, the gastric secretion returned, the appetite was restored, chyle was found in abundance in the thoracic duct, and, in fact, the whole digestive process was re-established, notwithstanding dissection proved that the operation had been performed most completely: at the same time it was proved that section of the nerves very materially deranges the digestion for a time, though if the animal live long enough, the effect will subside. It should be remarked, that in all the experiments on the vagi, Dr. Reid took care to maintain the entrace of air into the trachea. If the animal was not full-grown, the larynx being therefore less developed, a tube was introduced into the windpipe.

At the sitting of the Académie de Médecine, January 21, 1839, M. M. Jules Guyot and Casalis presented an account of their experiments on the nerves of the tongue. The glosso-pharyngæal betrayed great sensibility when pricked, pulled, or

cut: the division of it impeded deglutition, and appeared to destroy the perception of certain flavours, but not of all; probably those which are felt at the base of the tongue. Division of the lingual branch of the fifth pair destroyed the tactile sensibility and the sense of taste in the three anterior fourths of the tongue. Division of the hypoglossal paralysed the same portion of the tongue, but left the taste and tactile sensibility unimpaired.*

One result of these experiments is opposed to the conclusion from those of Panizza as to the function of the lingual branch of the fifth pair. The latter observer considered that it imparts nothing more than tactile sensibility. The true opinion seems to be, that this nerve comprises some fibrils subservient to taste, and others to common sensation. This two-fold function is presumable from a striking case related by Dr. Romberg, in *Müller's Archives*,† of paralysis of the third branch of the fifth pair on the left side, which was caused by pressure upon this nerve just after its issue from the cranium. In this case there was loss of taste as well as of tactile sensibility on the left half of the tongue. As for the glosso-pharyngæal, Dr. Romberg throws out the very probable idea that the signs of nausea and retching, caused by irritation of this nerve, have been mistaken for indications of taste.

The physiology of the nervous system continues to give birth to controversy, and strange to say, upon points which have been generally considered as most firmly established. Thus, several of the

* *Archives Generales de Médecine, Fevrier*, 1839.

† 1838, Heft iii.

sittings of the Académie de Médicine, during April and May in the present year, were occupied by discussions on the question, whether there is a speciality of function in the so-called nerves of sensation and motion. M. Gerdy, who was the first to raise the question, supported his doubts as to the generally received opinion, not only by some severe criticism on the experimental proofs of it, but also by the enumeration of certain pathological facts. These were chiefly cases, in some of which a partial lesion of the spinal marrow had caused paralysis, both of sensation and motion; while in others a general lesion of the medulla produced only a paralysis of motion; in others there was injury in the spinal marrow, with integrity of sensation and motion in parts supplied with nerves from *below* the injury; and in others, again, the functional lesion occurred in parts supplied with nerves from *above* the diseased portion of the medulla. These facts, even if admited as authentic, and carefully related, evidently bear less on the separateness of function in certain nerves, than on the connection between the nerves and spinal marrow; and, after all, they are but exceptional to an immense collection of cases which lead to a very different conclusion. It must be observed that the inference to be drawn from them, is of a negative character; but who shall say what degree of structural lesion short of absolute destruction is incompatible with the continuance of function in any organs, but especially of a part of the nervous system, and what disease is partial only. A limited spot may be palpably softened, but who can undertake to say that the

neighbouring part is healthy? We are so profoundly ignorant of the instrumentality of nervous matter, that we could seldom or never undertake to say that a portion of the brain or of the spinal cord, or of a nerve, is so hard, or so soft, or so unlike its usual appearance, that it could not have continued its function, nor, on the other hand, that its condition was so natural that its functions must have been unimpaired.

M. Blandin defended the orthodox doctrine in a very convincing manner, but neither in *his* remarks, nor in those of Bouillaud and others, was any allusion made to the reflex function of the spinal marrow, the knowledge of which would, it appears to me, have explained many of the anomalous pathological facts adverted to by M. Gerdy. Indeed, in this department of physiology, the French appear to be rather behind the current knowledge.

The strongest objections adduced by M. Gerdy were founded on the discrepant results obtained by vivisectors; as, for instance, from the experiments of Bellingeri on the one hand, and of Magendie on the other. But these may be easily accounted for by the circumstance that they were performed on the higher animals (as dogs and rabbits), in which, as Müller has observed, the necessary operation being of the most cruel description, causes a great shock to the whole system, and thus prevents the experimenter from obtaining decisive results. In the report of the discussion, I did not observe that any allusion was made to the experiments of Müller on frogs, which one would imagine had completely settled this question, unless it be main-

tained that what is true of the spinal nerves in these animals, may not obtain with those of the higher classes.

On the whole, I confess that nothing in the course of this discussion arose to make me differ in opinion from M. Blandin, who declared that if we are not to conclude that there are separate nerves of sensation and motion, we must give up attempting to establish anything in physiology.

I shall now take notice of the investigations of Dr. Henle respecting the formation of mucus and pus in relation to the epidermoidal tissue.* This anatomist has ascertained that the epithelium is composed of cells, containing nuclei, but differing in their form and arrangement. He distinguishes three kinds of epithelium. The first comprehends the external cuticle, the epithelium of the alimentary canal as far as the pylorus, that of the female urethra, the vagina and inferior half of the cervix uteri, and of the surface of the eye, even on the cornea. This tissue is found also on most of the serous membranes, in the interior of vessels, and in the secretory canals of glands, excepting the testes. The cells in this form of epithelium have the appearance of flattened globules; the nucleus is in the centre of each cell, and the cells are arranged like pebbles in pavement. On the skin and mucous membranes they are found in layers, lying upon one another, being more distinct in the deeper strata; but nearer the surface they are so compressed as to look like scales, and the nuclei are scarcely distinguishable from the vesicles. The nuclei of the deeper cells are of a

* *Hufeland's Journal*, 1838.

reddish yellow. In the serous membranes, in the interior of vessels, in glandular canals, and in the tympanum, there is only one layer of cells. The *second* species of epithelium is characterised by the cylindrical, or, rather, conical form of the cells, which are arranged side by side, their long axes being vertical to the mucous membrane, and their bases being the free extremities. The nucleus is situated midway between the ends of each cell. This structure is found throughout the intestines, in the excretory ducts of most of the glands, in the gall-bladder, and the generative apparatus of the male, excepting the vesiculæ seminales, and the follicles of the prostate gland. The cells of the *third* species are also cylindrical, but are distinguished by the cilia on their bases. They may be seen in the respiratory organs, in the internal organs of generation of the female, in the ventricles of the brain, in the palpebral conjunctiva, and in the lachrymal sac and duct.

After this exposition of the structure of epidermis and epithelium, it is not surprising that Dr. Henle contends for its vitality, which he considers still further supported by the fact that the cells are the depositories of the pigmentum nigrum in dark races, and sometimes of fat, as in the skin when affected with *acne punctata*, and in the cells of the liver. He adverts also to the movements in water of those cells which are furnished with cilia.

Dr. Henle has ascertained that *normal* mucus consists of the debris of the superficial layers of cells mixed in various proportions with the fluids secreted; these cast-off cells being similar to the branny desi-

cated particles which exfoliate from the cuticle, and differing from them only in their infiltration with liquid. This debris, however, is only formed where there are multiple layers.

The *morbid* products are of three kinds. 1. Portions of epithelium separated, but unaltered in structure, like the cuticle of blisters. 2. Portions of hypertrophied epithelium, as in the squamæ of pityriasis, and in some kinds of sputa. 3. Mucous globules formed by a change in the cells of the epithelium. The mucous globules are not distinguishable from those of pus, and those of fibrinous effusions. From his observations on the globules in these several products, Dr Henle is disposed to conclude that the formation of epithelium, the secretion of pus, union by the first intention, the production of false membranes, and granulation, are but modifications of a more general process. This seems the more probable, when we are told that the same kind of nucliferous cells or globules are found in other tissues than the epidermoidal. Thus the parenchyma of the liver is composed of such cells, and even the acini of glands, which have no excretory ducts, are said to contain cells precisely similar to those of the epithelium of serous membranes.

These minute investigations of Dr. Henle will appear still more interesting if we view them in juxta-position with the very recent researches of Dr. Mandl on the composition of pus and mucus.* According to this indefatigable observer, there is no difference between the globules of mucus and of

* *Anatomie Microscopique, par le Docteur Louis Mandl, 2me. Livr.*, 1839. See also *L'Expérience, Août* 1838, *Janvier*, 1839.

pus. These fluids only differ in the circumstance that the latter contains a larger quantity of globules, and that in the former there are flakes of epithelium; but it must be remembered that when the mucous membrane is irritated, the globules increase in number, and that pus on a mucous membrane may be mixed with epithelium. If pus and mucus be mixed, it is impossible to distinguish the globules of the one fluid from those of the other. Dr. Mandl has further ascertained, that the globules of these fluids are identical with what he describes as the fibrinous globules of the blood. The existence of these globules, which are quite distinct from the true red globules, he demonstrated by the following procedure:—He mixed with some blood drawn from a vein a portion of white of egg, which does not contain globules, and upon beating the liquid with twigs, obtained flakes of fibrin much less coherent than those derived from pure blood. These flakes present under the microscope *globules precisely similar to those of pus.* In the coagulum sometimes formed in the fluid of a blister, we may detect the same globules. Now, these globules are identical with those white globules which are found in the blood when it has ceased to circulate, and which have the same form in different classes of animals, and differ in this important respect from the true blood globules. Blood taken from the dead body, especially when it has not coagulated, exhibits them in abundance. Their presence, however, must not lead us to suppose that pus exists in the blood; for these globules are the elementary parts of the fibrine, which in dense coagula are too

numerous and coherent to be recognised separately. If, then, globules of pus and mucus are nothing more than the white fibrinous globules of the blood, how are pus and mucus secreted? The fibrin is held in solution by the serum; the latter escapes from the capillaries by exosmosis, and when out of the vessels coagulates and resolves itself into its elementary globules. These fluids contain all the elements of the blood, except colouring matter, which remains in the blood globules.

The following experiment Dr. Mandl considers decisive in proof of the formation of these globules by the coagulation of fibrin. On filtering the blood of frogs after the plan of Müller, we obtain a clear liquid (*liquor sanguinis*), on the surface of which small dots may soon be perceived. These examined by the microscope present globules precisely similar to those of pus and mucus. That these globules are formed *after* the coagulation of the fibrin, is proved by their size; had they been formed *before*, they would not have passed the filter, as may easily be shown on attempting to filter pus even when diluted with water, for the pus globules, which are of the same size as those of fibrin, remain on the paper.

Dr. Mandl described these fibrinous globules in a memoir on pus and mucus, presented to the Académie des Sciences, September 25th, 1837. He there mentions, that besides the large globules of pus, there are others four or five times smaller, being minute portions of albumen coagulated by the salts, and more numerous as the salts are more abundant.

I have entered thus fully into the observations of Dr. Mandl, because of their bearing on the recent and important investigations of Mr. Gulliver.

In a paper in the *Philosophical Magazine*, Sept. 1838, Mr. Gulliver states that he has repeatedly detected pus globules in the blood, "in almost every instance in which there was either extensive suppuration or great inflammatory swelling without a visible deposition of pus in any of the textures of the body;" and he regards "the contamination of the blood by pus as the proximate cause of the sympathetic inflammatory, sympathetic typhoid, and hectic fevers." His mode of examination was by mixing water with the blood, which, while it dissolves the blood globules, has no action on those of pus, which subside to the bottom, and may then be discovered by the microscope. The blood in Mr. Gulliver's cases was taken after death from the heart or great veins of persons who had died of small-pox, peritonitis, diffuse inflammation of the leg, pleurisy and phthisis. In another set of experiments the blood was taken from animals in which inflammation had been artificially produced, and the result was the same. Mr. Gulliver inclines to the opinion that pus globules are probably degenerations of blood globules, modified by the inflammatory process; and he considers suppuration as a sort of excretory action, or a proximate analysis of the blood, the blood corpuscles becoming altered by stagnation, and discharged in the form of pus. Mr. Gulliver, in order to obviate an objection that might be drawn from the relative dimensions of the capillaries of these globules, suggests that the capil-

laries may be enlarged sufficiently to admit a single row of pus globules; on the other hand, the escape of red globules from these enlarged vessels is prevented by the coagulation of the blood. He has never found pus globules in that soft puriform matter sometimes met with in the fibrinous concretions of the heart and great veins.* He has not been able to produce pus in batrachians, and is opposed to Gendrin's opinion that fibrin is convertible into pus.

Mr. Gulliver presented to the Medico-Chirurgical Society, May 14th, 1839, some further researches on the pus globule, which he describes as formed of central molecules, generally three in number, connected by an external part, which is soluble in sulphuric, sulphurous, oxalic, and acetic acids, and in all respects analogous to coagulated fibrin. The molecules differ from fibrin, and from any part of the human blood corpuscle, in form, density, indisposition to putrefaction, and complete insolubility in acetic acid.†

These conclusions of Mr. Gulliver are obviously at variance with those of Dr. Mandl. Those globules which the former observer has recognized as purulent, Dr. Mandl would determine to be nothing more than fibrinous globules, which may be found in the blood taken from most dead bodies. Again, while Mr. Gulliver describes the pus globule as essentially containing nuclei, Dr. Mandl considers these bodies of secondary formation, for according to his observations,‡ when examined in a fresh

* See some very interesting observations on this subject by Mr. Gulliver in the *Medical Gazette*, March, 1839.

† *Lancet*, May 18, 1839.

‡ *Anat. Microscop.*

secretion the pus globule has no nuclei; but if it has remained any time in water, or any other liquid, one large nucleus is formed, or two, three, and even four smaller ones. The globule has then the appearance of a packet of albuminous molecules. The action of acetic acid on the pus globule is differently described by these gentlemen; Mr. Gulliver avers that it dissolves the envelope, and sets the nuclei at liberty; but Mandl, as if in an anticipated correction of Mr. Gulliver's statement, says that the acid contracts the globules, and causes a precipitation of the albuminous molecules held in solution by the serum of the pus. He has never seen the escape of the supposed nuclei under such circumstances, and then remarks, "*peut être que l'apparition des globules albumineux a conduit quelques observateurs à la conclusion de la dissolution d'une enveloppe, et de l'apparition des noyaux dans les globules purulents.*" This remark appeared in the *Anatomie Microscopique* some time before the researches of Mr. Gulliver were published; and as they cannot therefore refer to him, it would seem that others have taken the same view of the subject as the latter observer. The profession in this country is greatly indebted to Mr. Gulliver for the zeal with which he has devoted his abilities to these difficult investigations.

I should perhaps mention in this place, that about the same time with the researches of Dr. Henle, appeared those of Dr. Vogel, of Erlangen, on the characters of pus and the nature of suppuration. I can only find space for observing, that he considered pus globules as transformations of epithelium-cells.

On reviewing these several researches, we cannot help feeling somewhat astonished, that although the nucliferous cells of the epithelium present some differences in their forms and arrangement, yet that, apparently, the same description of globules should be found under circumstances so various as in the epithelium of serous membranes, the parenchyma of glands, the secretion of mucus and of pus, the formation of false membranes, the granulation of wounds, and even in the blood itself. We seem to be either on the borders of some great and perhaps useful generalisation, or in the predicament of certain metaphysicians, who, after much laborious analysis, find that things apparently the most different in the universe, are absolutely identical, because they are resolvable into certain affections of consciousness.

The present will be a convenient place for noticing a very valuable paper by Dr. G. Bird, on the "Chemical Nature of Mucous and Purulent Secretions."* It had been previously ascertained by Dr. Babington, that a fluid closely resembling mucus may be produced by agitating pus with a solution of chloride of sodium; still this artificial mucus was wanting in the character of becoming opaque by long continued ebullition, or by exposure to the air. Dr. Bird discovered that by mixing with this fluid an aqueous solution of soda, and passing through the mixture carbonic acid, a fluid was formed which presented every characteristic of mucus.

Dr. Bird remarks, that if a mucous membrane may be considered as pouring out the albuminous

* Guy's Hospital Reports, number vi.

particles of the blood, combined with an excess of saline matter, there is no difficuly in understanding how, on a diminution of the saline matter, the albumen may appear in the form of lymph. He suggests, that on the surface of a serous membrane, the blood gives up a mere aqueous solution of albumen with saline matter (serum); on a mucous surface, a mixture of its colourless albuminous particles with serum, which at the instant of their separation combine with an excess of saline matter; whilst on a suppurating surface the blood parts with all its ingredients except the colouring matter, and that portion of dissolved albumen which has the power of spontaneous coagulation. Dr. Bird states, in confirmation of the above views, that on incineration mucus yields a smaller quantity of saline matter in proportion as it approaches in character to the puriform condition.

I now proceed to speak of the more recent contributions to our knowledge of the blood, both in its healthy and morbid states, a subject of great interest in consequence of the strong tide of favour which has lately set in towards the humoral pathology. It might have seemed more in order to have treated of it before considering the nature of pus and mucus, but we were almost necessarily led to the latter by the anatomical observations of Dr. Henle.

Of the recent speculations on the blood, the most singular are those of Professor Schultz, of Berlin. This eminent physiologist maintains that the organic elements of the blood, during life, are different from the chemical elements separated after death. The organic elements are the *plasma* (which is the

formative and nutritive part,) and the blood vesicles. The latter contain, besides the nuclei, an aeriform fluid, which, in arterial blood, is oxygen, but in venous blood carbonic acid. The envelope of the blood-vesicle is endowed with vital contractility. The plasma is a colourless tenacious liquid, suspending the blood-vesicles, but elaborated from the latter. It is not serum, for serum does not exist in living blood, being formed as a chemical product after the coagulation of the plasma. Fibrin is not held in serum in living blood, but is an organic formation from the plasma. The vesicles are living beings, differing according to their age or the period of their sojourn in the economy. The young vesicles possess a greater degree of contractility, and are specifically lighter; they contain a smaller quantity of colouring matter, and therefore circulate more briskly. The older vesicles are heavier, and more easily deposited, especially in such parts of the circulating apparatus as the portal system. The liver is the great emunctory of the effete vesicles. The colouring matter is not easily taken up by a saline liquid, not because it is insoluble in it, but because the saline liquid corrugates the vesicular envelope, and therefore prevents its escape. The young vesicles are more retentive of the colouring matter, but they gradually lose this property as they grow older; they are easily deprived of the colouring matter when the serum is too aqueous, and are then eliminated from the system. But when there is an excess of saline matter, as after a great diminution of perspiration and urine, the vesicles live longer, accumulate, and thus encumber the blood vessels,

especially the vena portæ. An aqueous condition of the serum, as in chlorosis, icterus, and the like, hastens the death of the vesicles, and their escape from the system. These views Professor Schultz has confirmed by experiments in feeding animals on substances abounding or deficient in saline matter.*

Dr. Mandl† is of opinion that the discrepancies of authors respecting the appearance of blood globules, are owing to the different circumstances under which these bodies have been examined, since they are variously modified by air, water, drying, &c. He partakes of the opinion of Blumenbach, Blainville, and Donné, that the nucleus is not primary, but the effect of coagulation of the fibrin contained in the globule. It is easier to prove this in human blood than batrachian, because the latter is more quickly coagulated. This bears importantly on the formation of the globules which have been supposed to be made out of lymph globules, around which the colouring matter is deposited: but the supposed lymph globules are only albumen or fibrinous globules. He is also unfavourable to the supposition of an envelope in the normal state, but allows that after the production of the nucleus by coagulation, an envelope may be seen; it is, however, only of secondary formation. The colouring matter is deposited in the tissue (*trames*) of the globules: it is dissolved by water, but the envelope remains, though very pale, and may be made to reappear by a solution of iodine.

Three kinds of globules may be distinguished. 1. The true blood globules, round or elliptical.

* *Gazette Medicale de Paris*, p. 505, 1838.

† *Anatomie Microscopique*, 1838.

2. Fibrinous globules, round, of unequal surface (*mammelonnés*), and of large size. 3. Albuminous globules of very small size. Besides these there are also globules of sweat, corpuscles of fat, fragments of epithelium; all these have been mistaken for blood globules. In serum there are globules of albumen from 1–400 to 1–500 millim in diameter, probably particles of albumen precipitated by salts of serum.

Dr. Mandl examined the coagulation of blood under the microscope. On observing a drop between two layers of glass, currents of globules may at first be seen; afterwards white globules (*mammelonnés*) sticking to the glass; against these the true globules strike, and change their form from the shock, but the others remain unaltered. These are the fibrinous globules; they are never seen in the blood when circulating; they behave under re-agents like fibrin, and their number increases under observation, which could only happen by a formation after the removal of the blood.

M. Dubois (*d'Amiens*) has been giving his attention especially to the blood of scrophulous subjects, with the view of ascertaining the cause of the scrophulous cachexia. The first observation he made was, that the blood of such subjects is decidedly less coagulable than usual. Under the microscope he noticed the colouring matter in a state of separation from the globules. These bodies presented many deformities; some were oblong, others cylindrical. The lenticular globules were so depressed in the centre as to give the appearance of being perforated.

The colouring matter, M. Dubois thinks with

Raspail, forms no essential part of the blood globule in the normal state, but is only spread over it as a layer (*en nappe*). Its separation he attributes to the deficiency of albumen, rather than of saline matter in the serous vesicle. The congestions to which strumous patients are so liable may be owing in part to the diminished coagulability of the blood, in accordance with the results of many of Magendie's experiments. But he seems to regard the altered shapes of the globules as scarcely less influential, since the want of a mutual adaptation between these bodies and the capillaries must give rise to obstruction.*

How curious are these returns to by-gone opinions, almost tempting us to believe for a moment that the thoughts and discoveries of men, instead of moving progressively, revolve in cycles! Well might Sir Thomas Browne observe, "For as though there were metempsychosis, and the soul of one man passed into another, opinions do find, after certain revolutions, men and minds like those that first begat them."† *Non enim hominum interitu sententiæ quoque occidunt.*‡

M. Denis, of Commercy, in February, 1838, published some interesting researches on the blood in the *Archives Generales*, but he has since enlarged his observations, and embodied them in a separate treatise, entitled *Essai sur l'Application de la Chimie à l'étude Physiologique du Sang de l'Homme, &c.* M. Denis is evidently disposed to attach more value

* *L'Expérience, Mars*, 1839.

† *Religio Medici, Sec.* 6.

‡ *Cicero de Naturâ Deorum.—Lib. i., c. 5.*

to observations on the purely physico-chemical phenomena of living bodies, than is warranted by the present state of organic chemistry; we must, therefore, receive with much caution his physiological inferences and their practical applications; but his facts are well worthy of record.

M. Denis thinks he has demonstrated that albumen contained in serum consists of fibrin held in solution by the saline ingredients of that fluid. He prepared an artificial serum, by dissolving some pure well washed fibrin in water, containing nitrate of potash. This fluid resembles serum, precipitates corrosive sublimate, is converted by alcohol into a curdy mass, and at 74° (*centig.*) is coagulated. If the solution be much diluted the fibrin reappears with its original properties; but if a little caustic soda be added, this does not happen. Since the announcement of this fact in February, 1838, other chemists have disputed it in consequence of their having failed in their attempts to make the artificial serum; M. Denis therefore presented to the Académie des Sciences, at the sitting of April 1, 1839, a formula for the composition of the saline fluid, and the mode of subjecting the fibrin to its action.

M. Denis believes that albumen is found in three principal forms. 1. As a liquid, so preserved by means of the saline matters, and an alkali in the water which has dissolved it. 2. As a solid, in minute globules. 3. As a solid, but in large flocculi, formed by the coalescence of globules. His views of the formation of blood corpuscles appear very fanciful. He imagines them to be produced by the precipitation of albumen, which assumes the globular

form, and that their flattened appearance is owing to their pressure against the parietes of vessels, and against each other. M. Denis distinguished thirty-one varieties of blood met with in persons who enjoyed good health. These varieties have reference chiefly to the density of the fluid, and the relative proportions of the serum and the globules.

The *Philosophical Transactions* for 1838, contain a valuable paper by Dr. Davy, entitled "An account of some Experiments on the Blood in connection with the theory of Respiration." Dr. Davy finds the blood capable of absorbing oxygen, both from atmospheric air and from oxygen gas, independently of putrefaction. After blood has been agitated in common air, a trace of cabonic acid, not exceeding one per cent, is found in the residual air; but when pure oxygen has been employed, no carbonic acid can be detected. Carbonic acid is absorbed by blood in contact with it, or by serum agitated with it over mercury in quantity exceeding the volume of the liquid. Arterial and venous blood are much darkened, and serum is made more liquid by saturation with carbonic acid. Serum, in its healthy state, is incapable of absorbing oxygen, or of immediately furnishing carbon to form carbonic acid, and after it has absorbed carbonic acid, only one-tenth of the absorbed gas is expelled by agitation with atmospheric air or hydrogen. The alkali in blood is probably in a state of sesquicarbonate. The quantity of air obtained from blood is variable, and it always consists of carbonic acid. A portion of oxygen exists in blood, not extricable by the air pump, but capable of combining with nitrogen gas;

it is in larger proportions in arterial blood. The absorption of oxygen by blood is attended with an increase of temperature. According to Dr. Davy the lungs are both absorbing and secreting organs; they introduce oxygen into the blood, and separate carbonic acid from it. Animal heat is owing (1) to the fixation of oxygen in blood during the conversion of venous into arterial blood, and (2) to the combinations into which it enters in the secretions and changes essential to animal life.

I cannot but advert in this place to Dr. Davy's very interesting observations on the condition of the blood after death,* though it will be impossible for me to enter into all the details; I can only extract one or two of what appear to me to be the most important of the facts. In one hundred and five, out of one hundred and sixty-four cases, the blood was found coagulated, and mixed with fibrinous concretions or coagulated lymph. In the cases in which the blood was fluid and not coagulable on exposure, death had been caused by asphyxia, accidental or morbid. Dr. Davy describes a peculiar *broken up* condition of the blood, not hitherto noticed, and found only in the ventricles. He attributes it to the action of the heart on the blood, after the latter had coagulated. One observation is particularly deserving of attention, as to the state of the blood in cases where the parts in contact with the blood presented a red stain. In these instances the colouring matter was held in solution by the serum, a condition more or less connected with putrefaction.

* *Edinburgh Medical and Surgical Journal*, April, 1839.

Dr. Davy remarks upon the different degrees of coagulability possessed by the lymph, even in the the same body; as, for instance, when the cavities of the heart contain liquid coagulable cruor, soft crassamentum, and firm fibrinous concretions. He speaks of the concretions as often presenting appearances of irregular efforts at organization, and as illustrating the formation of false membranes, adhesions, indurations, &c. He has found by the microscope in a hepatized lung undergoing ramollissement, a matter very similar to that into which the fibrinous concretions are often converted, whether in the heart or in veins, and containing particles very like pus globules. (These are probably the fibrinous globules of Dr. Mandl.) Dr. Davy directs attention to the very different states of lymph in phlebolites, aneurismal layers, and those fibrinous concretions in the veins of phthisical subjects, which so soon liquify. In the majority of instances gas was disengaged from the blood when agitated in atmospheric air, and in many of these its nature was tested and found to be carbonic acid, proving that this acid had been in excess, probably from disease, or from the act of dying, when the power of secretion is arrested. In accordance with this observation, the blood was usually dark-coloured on both sides of the heart. Dr. Davy is of opinion that carbonic acid acts a very important part in the economy of life, and is connected with the symptoms, if not the production of many diseases.

The blood corpuscles were seldom uniform in appearance or size. In that which had been agitated

in air, globules were seen attached to the blood discs, keeping them in a perpendicular position, instead of flat or revolving. In every case where, during life, there were purulent discharges or collections, Dr. Davy detected globules like pus-globules. He does not say whether he looked for them in other cases. If Dr. Mandl is correct, they would not be confined to the cases alluded to.*

Professor Stannius has made some interesting observations on the proportion of fibrin in the venous blood of different subjects. He states that the smallest quantity was found in persons possessing good health; the largest in cases of pulmonary inflammation and of phthisis.†

It would be scarcely proper for me to dismiss the chemical pathology of the blood without a passing notice of the lectures which M. Magendie has been for the last year or two delivering on this subject;‡ but I confess that it would have been more agreeable to me to have avoided any mention of them, since they contain so little worthy of commendation, and so very much to condemn. There was a time when we received the statements of M. Magendie as those of a pains-taking man devoted to the discovery of truth,—one who preferred facts to system and theory: but now there are no statements which wear more of the air of romance than his,—none which show more glaringly how readily an author's mind may be led away by the wildest hypothesis provided it be his own. In the account

* *Vide Supra.*

† *Hufeland's Journal,* 1838.

‡ See "*Leçons sur la Vie,*" and "*Leçons sur le Sang.*"

given of the experiments with the hæmodynamometer there are many highly interesting facts, but they are accompanied by such strange misrepresentations, that were they not associated with the name of M. Poiseuille, as well as with that of Magendie, we should feel at a loss to know what amount of credence should be given to them ; for what reliance can be placed upon the judgment of a man who speculates upon the operation of remedies taken into the stomach according to the results obtained from mixing them with blood in glasses,—who, after diluting the blood of an animal by frequent bleedings, and thereby causing passive congestions in the lungs and other organs, points to the latter as examples of inflammation, and thence infers that venesection is not only not the remedy for inflammation, but that it even aggravates the mischief,—and who, after removing a considerable quantity of blood from a dog, and depriving it of its fibrin, re-injects this altered fluid, notes the various disorders in the ill-fated animal, and then gravely assures us that this de-fibrinized dog is the representative of a patient in typhus? What shall we think of the knowledge, or the honesty of one who intimates to his pupils that the majority of physiologists neglect the study of the physico-chemical phenomena of living bodies, and explain every question by the doctrine of a vital principle ; that scarcely any one but himself pays any attention to the fluids ; that the labours of pathological anatomists are all but good for nothing, and that it is a common practice for medical men to bleed patients in chlorotic anæmia? What of his capacity for

logic, who argues against the existence of inflammation, because no one has ever seen an inflamed organ on fire; and against that of irritation, because our tissues cannot be the subjects of passionate emotion?

I confess that my feelings on perusing these *leçons* have been those of unmeasured disgust; and if it should be thought I have been under the influence of prejudice, I fear that I cannot deny the charge. Certainly I had no prepossession in favour of one who takes such small account of the sufferings of the brute creation, as to excite them for the reiterated demonstration of what nobody doubts, and sometimes apparently for no other purpose than that of pointing a sarcasm, or of gaining some momentary *eclát*.

I next proceed to notice some of the later researches on the secretions. One of the most important contributions to this department of our science is a paper on the fluid of the vesiculæ seminales, by Dr. Davy,* whose name I have already mentioned more than once, and to whom the medical literature of the past year is very greatly indebted. The object of this distinguished physiologist and chemist was to ascertain what light might be thrown on the function of the vesiculæ seminales, by comparing the fluid they contain with that of the *vasa deferentia*, and of the *tubuli testis*. Dr. Davy's observations extended to twenty cases of persons who died in the Military Hospital, Fort Pitt, Chatham. The examination of the fluid was both chemical and microscopic; and the most im-

* *Edinburgh Medical and Surgical Journal*, July, 1838.

portant result was the discovery of spermatic entozoa in the fluid of the vesiculæ seminales, in every instance in which it was detected in that of the vasa deferentia—a fact proving the truth of the old opinion (in opposition to that of Hunter,) that the vesiculæ are reservoirs of the seminal fluid. But that they are also secreting organs, furnishing mucus, and perhaps a peculiar fluid, seemed deducible from the fact, that a general difference of quality existed between the fluid of the vesiculæ and that of the vasa deferentia. The exact nature of this was not ascertained, but the former was more fluid. In only two cases of the twenty did Dr. Davy find the entozoa in the fluid expressed from the substance of the gland, but he observed that it contained, besides some globules about the size of blood-globules, certain others from fourteen to fifteen times smaller, which he conjectured to be the ova of the spermatazoa.

Dr. Davy has examined the fluid expressed from the vesiculæ during an alvine evacuation, and found that in a healthy person it always contains entozoa, the greater number however being dead. Thus it appears that the vesiculæ are cloacæ, as well as reservoirs.

Drs. Pürkinje and Pappenheim have performed some interesting experiments on the production of muriatic acid in the stomach. They conclude that a particular organ for its secretion is not requisite, and that the secretions mixed with the food in the stomach, viz., mucus and saliva furnish enough chloride of sodium for the digestion of coagulated albumen, provided galvanic action be present.*

* *Müller's Archives*, 1838.

Dr. Mandl* has made out a table of the different secretions, in order to show that the organs supplied by cerebro-spinal nerves secrete an alkaline fluid (*e. g.*, saliva, tears, the mucus of the colon, and that of the bladder); but those with ganglionic nerves, an acid fluid (*e. g.*, the secretions of the stomach, the cæcum, and the vagina). Dr. Mandl notices the discoveries by Retzius, Varrentrap, Giltaz, and Remak, of greyish fibres in the cerebro-spinal nerves, which will account for the formation of a slight quantity of acid in the alkaline secretions; and of cerebro-spinal filaments in the ganglionic nerves, which will explain the existence of alkaline matter in the acid secretions. The only exception to the above statement is in the skin; but this Dr. Mandl thinks may be got over by attributing the acid in the perspiration to the action of the atmospheric air.

To Dr. Rees we are indebted for an analysis of liquor amnii, and likewise of diabetic blood. The papers containing his researches are published in *Guy's Hospital Reports*.†

I cannot resist the temptation of concluding this part of my subject by a brief notice of the curious observations lately made by M. Turpin and others on fermentation. M. Turpin believes that this process begins with the separation from organic tissue, whether animal or vegetable, of very minute spherical particles (globulin), which after a time rise to the surface of the fluid, and there germinate. This germination requires a certain amount of heat and

* *Gazette des Hôspitaux*, No. cxxxii., 1838.

† No. vi.

exposure to atmospheric air. By the decomposing power of these infusorial plants, sugar is converted into alcohol, and carbonic acid is evolved. The vesicles propagate by buds or new cells, after the manner of pollen grain, the inner membrane being protruded through a fissure in the outer. They are developed in a longitudinal direction, so as to form articulated stalks of five or six cells. In yeast they exist as single vesicles, the stalks being disarticulated. Adding yeast to a fluid, when fermentation is languid, is like sowing millions of seeds in a congenial soil. The yeast plant of beer is called by M. Turpin *torula cerevisiæ*. Every infusion has its peculiar plant, and the whole race he designates *Levurians*.*

In the department of Pathological Anatomy the past year has produced nothing of very considerable moment.

M. Mercier has traced sterility to the obstruction of the fimbriated extremities of the fallopian tubes, produced by inflammation of the peritonæal membrane. This partial peritonitis he considers to be not unfrequently an extension of inflammation from the interior of the uterus, consequent upon parturition, or upon attacks of gonorrhœa.†

Glanders in the human subject has engaged the attention of that indefatigable pathologist, M. Rayer. He discriminates three varieties of the disease: the

* *Gazette Medicale*, Sept. 1, 1838.

† *Gazette Médicale*, October 27, 1839.

first characterized by ecchymoses in the nasal passages; the second by "foroncles;" the third by the combination of these lesions.*

Dr. Graves, in one of his valuable clinical lectures, has put forth the opinion that Bright's disease of the kidney is the effect, not the cause of albuminuria, being produced by the deposit of albumen in the urinary tubes. This view is founded on the fact that dropsy with albuminous urine may occur without this organic disease, and that other changes in the urine often occur, independently on a structural change in the kidney. In support of this opinion he appeals to the microscopic researches of Valentin, who found in some specimens of the granular kidney the cortical tubes injected, as it were, with an opaque matter.†

The pathology of the chronic *simple ulcer* of the stomach first accurately described by Cruveilhier in his *Anatomie Pathologique*,‡ and since more fully developed by the same author,§ has been admirably treated by Mr. Langston Parker, in an essay published in Dr. Johnson's *Medical Chirurgical Review*, for October, 1838. To this gentleman I need scarcely say that the profession owes one of the best monographs on diseases of the stomach.

M. Lombard, of Geneva, in his *Recherches Anatomiques sur l'Emphyseme Pulmonaire*, 1838, maintains that dilatation of the air cells is always accompanied by atrophy of the intervesicular tissue

* *Gazette Médicale*, October, 1838.

† *London Medical Gazette*, October 20, 1838.

‡ *Livr.* x.

§ *Revue Médicale*, 1838.

of the lungs, several cells being thrown into one anfractuous cavity, and the capillaries obliterated. The latter change he supposes to be cause of the former. That it is not the *effect* he argues from the infrequency of hæmoptysis in cases of emphysema. Upon this point he is at issue with Dr. Carswell and others, who consider dilatation of the cells to be the primary lesion, and that the pressure of the retained air produces obliteration of the capillaries, and atrophy of the parietes of the cells. The observations of M. Lombard appear at all events to apply only to one form of emphysema, that designated by Dr. Williams as the *flaccid*, in contradistinction to the *tense* emphysema, in which there is often induration and hypertrophy of the intervesicular tissue.*

Professor Sebastian thus speaks of pulmonary tubercles:—"Tubercle, in its very earliest stage, always appeared to me in the form of a minute white cloud, placed in healthy parenchyma, and imperfectly circumscribed, at least not round." * * "I have frequently observed points growing from these minute clouds, and ascertained that in progress of time they enlarge, or rather that several of them coalesce, and by their union form the miliary tubercles of Laennec." The most remarkable observation of Professor Sebastian is "that tubercles cease to be formed in the substance of the lung when once it has commenced to exhibit manifest signs of inflammation round those bodies in the crude state."†

* Lectures on Diseases of the Chest, in the *Medical Gazette*, lecture xx.

† *British and Foreign Medical Review*, January, 1839.

Dr. Davy has described a peculiarity of structure in the basilar artery of man, which, though hitherto unnoticed, is by no means infrequent, viz., a fibrous band partially or completely intersecting the interior of the vessel. Dr. Davy found it in seventeen out of ninety-eight necropsies.*

In the same paper Dr. Davy has some interesting remarks on the relative prevalence of certain organic diseases. He is disposed to believe, "that there are organic constitutions prevalent at times, not less than atmospheric, and which, however produced, may be as much concerned in the origin of chronic disease, as the atmospheric influences are in the acute." I imagine that there are few practitioners who have not been struck with the occurrence of several specimens of organic disease within a short period of time, after which a long interval may pass without the occurrence of similar cases. This has certainly been my own experience, and I cannot explain it by the principle which would first suggest itself, namely, that at particular times the mind is apt to feel more interested in one disease than another, and, therefore, less likely to let an instance of it escape notice. I am quite sure that in my hospital practice, in the years 1834, 1835, and 1836, the cases of valvular diseases of the heart were at least double what they have been since, and I can partly account for this difference by the fact that cases of acute rheumatism, and especially of this disease, combined with endo-carditis and pericarditis, have since that period been less frequent than in the preceding years. May there not be relations,

* *Edinburgh Medical and Surgical Journal*, January, 1839.

though as yet undiscovered, between other chronic structural lesions and acute diseases, analogous to that subsisting between valvular lesion of the heart and endo-carditis, so that the occurrence of those acute maladies under particular atmospheric influences, may account for the subsequent grouping of their related structural diseases?

M. Tessier, in a series of most interesting memoirs,* has broached a new doctrine respecting what he calls the purulent diathesis He is of opinion that the purulent deposits met with in cases of phlebitis after operations, labours, &c., cannot be explained by the mixture of pus with the blood, because the collection of pus, whether in venous trunks or elsewhere, is always limited by false membranes or coagula. The purulent diathesis according to him is an alteration of the organism characterised by a tendency to suppuration, and it appears in three forms. 1. Purulent fever. 2. Purulent inflammations. 3. The purulent state. The first comprises numerous cases of febrile symptoms attributed to the third period of phlebitis, whether accompanied by suppuration or not. The blood may be transformed into pus in the vessels or in the tissues, but the patient may die before this transformation takes place. The metastatic depositions in these cases have nothing to do either with phlebitis or with wounds. The entire blood is altered, and has a tendency to suppuration; the external cause of this state being the vitiation of air by the crowding of patients. M. Tessier enumerates the lesions met with in this fever, viz., phlebitis (by no

* *L'Expérience*, 1838.

means constant), diffuse cellular inflammation, icteric tint of the skin, gangrene, purulent bullæ, subcutaneous abscesses. He specifies a peculiar alteration of the blood, which he considers an approach to suppuration. It is characterised by a yellow substance usually dissolved in the serum, or infiltrated into the fibrinous clot.

2. When the purulent diathesis shows itself under the form of purulent inflammations, the general symptoms are the same as in purulent fever; but there is local suppuration in addition in some single organs. This is very difficult to distinguish from the suppuration of recent inflammation.

3. The *purulent state* is characterized by collections of pus in different parts, without fever.

M. Durand-Fardel has described a form of encephalitis, which he considers to have been hitherto but little known.* The anatomical characters are redness and tumefaction of the cerebral convolutions over a considerable extent, with superficial softening of the grey matter and adhesions of the meninges, the symptoms being apoplectic, and precisely similar to those from cerebral hemorrhage, and especially hemorrhage into the ventricles. The essential anatomical character is the congestion. The symptoms of inflammation are wanting, because the tumefaction soon induces compression, and consequently a comatose state; in proof of which the writer adduces the fact, that when the lesion is of so small an extent as not to produce general compression, the symptoms are those of meningo-cephalitis. After all, is this disease any thing more than

* *Archives Generales, Fevrier et Mars*, 1839.

congestive apoplexy, continuing long enough for congestion to pass into inflammation, and to induce the corresponding alterations?

Appended to an abstract of Dr. Henle's researches, in the *Dublin Journal* for May, 1839, by Dr. Bigger, there is an extract from a letter addressed by Dr. Staberoh, of Berlin, to Dr. Stokes, and containing a very interesting account of some microscopic observations of Dr. Bohn and others on the mucous membrane of the intestines in cholera subjects. Desquamation of the epithelium takes place throughout the canal, most in the jejunum, less in the stomach, least in the colon. The peculiar rice-like or gruel-like fluid consists of serum and remains of epithelium. This fluid looks like pus when there is very little serum, and flocculent when the epithelium is thrown off in shreds. A thick matter, sometimes yellowish, is found in the hepatic ducts, consisting chiefly of epithelium. The pelvis and tubuli uriniferi of the kidneys and the ureters also contain a milky-looking substance of similar formation.

The lieberkuhnian glands lose their epithelium, and when it is separating they appear enlarged and swollen. The peyerian, if ulceration follow the loss of epithelium, look reticulated. In some there is an exudation in the submucous tissue, only less marked than in typhus, but the caudated masses never become softened. Sometimes those folds seen crossing the peyerian glands in children, reappear when irritation and deposition occur.

I shall close the section of pathological anatomy by noticing a very interesting communication by Dr. Pennock,* on dissecting aneurism of the aorta.

* *American Journal of Medical Science*, Oct. 1838.

Dr. Pennock relates the case of a negress who was the subject of this lesion. The symptoms I need not detail. On examination of the body, the aorta appeared divided into two vessels, one internal to the other, and communicating directly with the heart; the external of much larger calibre, communicating with the true aorta by a fissure, at the distance of half an inch above the semilunar valves. The false vessel was traced down to a cul de sac at the bifurcation of the iliacs. The peculiarity of the case was, that the false vessel presented circular fibres similar to those of the middle tunic of arteries. Dr. Pennock satisfied himself that the new canal had been formed by a rupture of the internal coat, *and one layer of the middle,* which allowed the blood to make a channel for itself between two layers of this tunic. Dr. Pennock performed a number of experiments in order to ascertain whether the laminæ could be thus separated by the intervention of a fluid. The result was affirmative. A case in a less advanced stage is related by Dr. Goddard. I have in my possession a specimen very similar to that of Dr. Pennock, which I met with in the early part of the present year, and in which the separation of the laminæ of the middle coat is very manifest.

I may perhaps be pardoned for recording in this place, that last year I observed a remarkable malformation of the aorta in a gentleman who died at the age of eighteen. The artery was contracted to the size of a crow-quill for the space of three-quarters of an inch, just beyond the origin of the left subclavian, and opposite to the remains of the ductus

arteriosus. The contracted part was pervious, but at the extremity nearest to the thoracic aorta it would barely admit a bristle. Beyond this part the vessel resumed dimensions not very much less than the normal; but in the abdomen it was scarcely larger than a swan's quill. The arteria innominata, the left subclavian, and the internal mammary arteries were very greatly increased in diameter. Several cases of contraction of the aorta are on record, and there is one related by Dr. Graham in the *Medico-Chirurgical Transactions*,* very similar to that which I have just described. It is remarkable that in all the cases the situation of the contraction was the same, so that Reynaud and Bouillaud regard the lesion as a sort of exaggeration of the slight puckering and contraction which exist normally in this part of the aorta, and which seem to be connected with the obliteration of the ductus arteriosus.

I cannot better conclude this section than by expressing my admiration of the labours of the Pathological Society of Dublin. It is to be hoped that the example set by that body will be followed in other cities.

In the *diagnostic* part of medicine we are indebted to M. Woillez, a young French physician, for some laborious and important observations on the inspection and measurement of the chest, considered as subsidiary to percussion and auscultation.†

* Volume v.

† *Recherches pratiques sur l'Inspection et Mensuration de la Poitrine, &c. &c. Par Eug. J. Woillez, M.D., Paris*, 1838.

M. Woillez divides the deviations from the normal form and dimensions of the chest into two classes,—the physiological and the pathological; the former being those independent on disease in the thorax and abdomen, the latter resulting from morbid action. The physiological irregularities are proved to be so numerous, that if we had learned nothing more from M. Woillez than the necessity of extreme caution in drawing inferences from the configuration of the chest, we should have owed him a most important lesson. I may mention as instances of the most frequent hetermorphisms of this class, a general prominence of the dorsal part of the right side, and of the anterior part of the left. It is superfluous to remark upon the importance of being acquainted with these facts in our diagnosis of emphysema, or of pleuritic contraction. One of the general conclusions at which he has arrived, is that the pathological irregularities are found most frequently in the same regions as the physiological, which, if correct, ought to increase our caution in estimating their diagnostic value. M. Woillez investigated the influence of muscular exertion on the conformation of the chest, and found its capacity greater in persons whose occupation required but little bodily labour than in those who have their upper extremities more actively employed. It might be expected, *a priori*, that a disproportionate exercise of the upper extremities would alter the natural form of the chest, but we should have hardly anticipated that comparative inaction of the body would have favoured the development of this cavity.

Dr. Stokes published in the *Dublin Journal,* for September, 1838, an abstract of a work by Testa, *Delle Mallatie del Cuore,* chiefly for the purpose of directing attention to dysphagia, as a sign of pericarditis and endo-carditis. Dr. Stokes adverts to cases which had fallen under his own observation of dysphagia co-existing with inflammation of the pleura and of the lung, and of aphonia with pneumonia and pericarditis. I have myself met with an example of each of these coincidences.

In a later number of the same journal, this able physician has published a most valuable paper full of original observations on the state of the heart in typhous fever, and on the indications which it affords as to the use of wine in this disease. Dr. Stokes has found that softening of the muscular substance of the heart is a very common lesion in the fever which has prevailed during the last few years in Dublin. Diminution of impulse, diminution of both sounds, so as to resemble the pulsation of the fœtal heart, extinction of the first sound, and in rare cases of the second only, were signs which enabled Dr. Stokes to prescribe wine with confidence, and without reference to the pulse. The indications from the latter he considered more fallacious, since it is often feeble, notwithstanding the heart may be beating with considerable vigour.

All who have observed and reflected much on diseases of the brain, must feel that in no department of pathology are our means of diagnosis so limited and equivocal, chiefly from the absence of physical signs, such as afford us so much assistance in recognising thoracic and abdominal diseases.

With the view, however, of restraining the doubt and indecision into which some eminent pathologists have fallen on this subject, Professor Forget, of Strasburg, has published two valuable memoirs on the degree of certainty which may be obtained in the diagnosis of cerebro-spinal maladies, showing that although there are many sources of doubt and obscurity, yet, in a large proportion of cases, an attentive investigation will surmount the difficulties, and enable us at all events to recognize with tolerable precision such diseases as congestion of the brain, encephalitis, meningitis, and rammollissement. He states that in the diagnosis of thirty-two cases of cerebro-spinal lesions, he was wrong in two instances, that in five he was doubtful, that in one he made no diagnosis, and that in one only was his state of doubt prejudicial to the patient, so that, as he says, the chances of *error* in these cases were as one in sixteen, of doubt as one and a half in eight. But by way of inspiring confidence, he observes that the cases in which the treatment was injured by the error and doubt in the diagnosis were but as one in thirty-two,—a curious application of the numerical method.*

While recording the contributions to practical medicine, I ought not to omit the mention of some papers by Mr. Laycock on hysteria.† He has not completed his analysis of the phenomena of this mysterious disease, but his essays present so remarkable an amount of research, and so much that is

* *Recherches cliniques sur le degré de certitude du diagnostic dans les Maladies de l'appareil Cérébro-Spinal.—Gazette Medicale*, No. 50., 1838.

† *Edinburgh Medical and Surgical Journal.*

interesting, with reference both to the physiology and pathology of the nervous system, that I cannot but take the opportunity of thus adverting to them, and at the same time of expressing a hope that the ingenious author may be induced to complete his investigation.

I regret that in *therapeutics* I have nothing of great moment to commemorate; but I shall mention a few of the practical suggestions which have struck me as possessing most importance.

Dr. Graves has recommended the use of belladonna in cases of cerebral fever with contracted pupil, arguing, very rationally, that in cases requiring a narcotic, the condition of the brain, coincident with a contracted state of the pupil, is more likely to be benefited by the influence of belladonna than by that of opium.* Since reading Dr. Graves's paper I have twice acted upon his hint, and in each case with advantage.

Dr. Lombard, of Geneva, has extolled the efficacy of carbonate of iron in pertussis.†

Dr. Granville has addressed to the public a work on counter-irritation, which has had the effect of directing the attention of British practitioners to the value of concentrated preparations of ammonia as external revulsives, though it may not have satisfied them that the author's antidyne lotions are capable of working all the marvels which his non-professional readers may expect.

To Dr. Law, of Dublin,‡ we are indebted for enforcing the greater efficacy of minute and frequently

* *Dublin Medical Journal*, July, 1838.

† *Ibid*, November, 1838.

‡ *Ibid*, January, 1839.

repeated doses of mercury in producing ptyalism than of larger quantities. Dr. Osborne,* while recommending acetate of lead and nitrate of silver in certain diseases of the stomach, lays great stress on the plan of washing out the organ with warm water before administering these substances. Dr. Corrigan has suggested† an ingenious method of diffusing iodine through the atmosphere of a chamber.

From the experiments of Fabré, Palaprat, Professor Rossi, of Turin, and others on the introduction of medicines by means of galvanic currents, it would appear that this method is too much neglected in this country. The practice of Signor Rognetta would encourage us to expect considerable benefit from the administration of strychnine in this manner in cases of amaurosis and paraplegia.‡

I may in this place briefly notice a curious experiment performed by Professor Rossi on the purulent matter secreted in the nasal passages of animals affected with glanders. He charged a galvanic pile of fifty jars with this matter by placing between the pairs pieces of cloth moistened with this liquid. The wires were directed into the distilled water of a eudiometer. After the apparatus had been in action two hours the atmosphere was filled with an intolerable odour. The Professor touched the conducting wires, and immediately felt so stunned that he fell to the ground. A friend, who flew to his assistance, suffered vertigo. After eighteen hours the gases contained in the eudiometer were examined, and the principal was found to be cyanogen.

* *Dublin Medical Journal.*

† *Ibid*, March, 1839.

‡ *Annali Universali di Medicina*, 1838.

This substance entering into the circulation combines with the hydrogen of the venous blood, and thence the formation of prussic acid, which produced its peculiar effect on Professor Rossi. He endeadeavours to shew that animals after contracting glanders, suffer symptoms of poisoning; and likewise persons who have partaken of the meat of animals that had died of this disease.*

I am not aware that any important addition has been made during the past year to the *materia medica*, with the exception of the *matico*, an account of which substance was presented to the notice of the Northern District Branch of this Association by our learned President, Dr. Jeffreys. The *matico* is a powerful vegetable astringent found in Bolivia, and there designated, from its power of arresting the hæmorrhage of external wounds, "*yerba soldado*," "soldier's herb."

This would be the proper place for adverting to vaccination, but the labours of the Committee on this subject render it superfluous for me to enter upon it. I shall only offer my testimony to the great merit and value of my friend Mr. Estlin's exertions towards introducing a more efficient virus than has been employed of late years.† From a communication with which he has favoured me, I extract the following passages:—

"The vesicle at the present time possesses all the characters which Jenner describes as belonging to the genuine disease, but it has lost a good deal of that activity which attended its introduction. We

* *Ibid.*

† See Mr. Estlin's papers in the *Medical Gazette*, 1838–9.

seldom now see any of the very inflamed and ulcerated arms which then were common; the vesicles are now *entire* through their whole course, whereas, at first, they were generally broken before the eighth day, apparently from their producing so much irritation as to occasion their being rubbed, excepting in cases of very young infants. * * * The fact is, I believe, fully established, and it is one worth knowing, that recent virus is more energetic in its effects than that which has passed through numerous subjects. If, in forty successive vaccinations, an obvious difference has occurred in its activity, it is not unreasonable to conclude that a much greater (and perhaps injurious) alteration may have occurred when it has passed through 1500 or 2000 human constitutions."

Forensic Medicine.—To the indefatigable Orfila we owe some very valuable experiments on the detection of poisoning by the salts of lead. In animals killed two hours after taking a small dose of the acetate, white streaks and spots were visible to the naked eye on the mucous membrane of the stomach, and found to consist of organic matter, combined with the salt of lead. When the animals were suffered to live two or three days, such spots and streaks were visible by help of a lens, though not to the naked eye, and were blackened by sulphuretted hydrogen. In a third class, allowed to survive seventeen days, these appearances were no longer to be seen; but on boiling the stomach for half an hour in diluted nitric acid, nitrate of lead

was obtained in pretty considerable quantity. The lead has been detected after a month by the same method. There is no risk of confounding the lead thus obtained with what exists normally in the tissues, for the latter is not separable by mere digestion in dilute nitric acid. It should be observed that the combination of the metal with the tissues is independent of any vital action, for the same results have been obtained from a dead stomach into which acetate of lead had been introduced after its removal from the body.*

M. Orfila has detected arsenic in dead bodies after its removal from the stomach by absorption, by boiling them in water, and testing the liquid by the process of Marsh. He is satisfied, however, that arsenic exists in very minute quantities in the body normally, probably in the form of arseniate of lime in the osseous system, and perhaps in other tissues also. It is not, however, separated by boiling water if the latter be neutral, while that which has been introduced from without will be dissolved. It is probable that beef bouillon made with peas contains an infinitesimal quantity of arsenic.†

These researches Orfila proposes to prosecute further with the aid of M. Couerbe, a young chemist who has recently ascertained that the presence of arsenic is manifested during putrefaction.

Dr. Lonsdale has published‡ some important observations on poisoning by hydrocyanic acid. He is of opinion that a person who survives fifteen minutes

* *Annales d'Hygiéne, et de Medecine Legale, Janvier*, 1839.

† *Gazette Medicale*, No. xiv., 1839.

‡ *Edinburgh Medical and Surgical Journal*, January, 1839.

is recoverable. The best means of restoration are to open the jugular vein, in order to relieve the engorged state of the right side of the heart, and to apply cold affusion. The contractility of the heart is directly enfeebled by the acid; but when this effect is but transitory, the action of the organ is still impeded by the mechanical distension caused by the engorgement which takes place during the suspension of its contractions.

The most important medico-legal observation is, that when a dose not rapidly fatal has been given, the convulsions and tetanic spasms may subside, leaving a comatose state, precisely simulating apoplexy. Dr. Lonsdale thinks that writers have overlooked the fact of the exhalation of the acid from the lungs as a sign of poisoning by this substance. He is of opinion that ʒi. of Scheele's acid would affect an adult within the minute, and ʒiii. or iv. within ten or fifteen seconds.

It is well known to medical jurists that the signs of death by hanging are sometimes very obscure. M. Devergie proposed to the Académie de Médecine* as a new test, the detection of spermatic animalcules in the urethra. He states that in the bodies of persons who have died from this cause, there is reddening of the extremity of the glans, which is moistened with mucus and semen, congestion of the corpora cavernosa and corpus spongiosum, and an arborescent injection around the vesiculæ seminales. To the first of these signs M. Orfila objected that the entozoa might have been left as the result of a coitus, or of a pathological spermatorrhœa.

* *Seance, Novembre* 20, 1839.

In connection with this subject I may recur for a moment to the observations of Dr. Davy on the fluid of the vesiculæ seminales. He states that although the seminal fluid rapidly becomes putrid when exposed to the air, the animalcules resist change for a long time. Some were observed in putrid fluid kept ten weeks at a temperature between 50° and 60°, Fah. In another instance, a piece of linen which had been smeared with the fluid and kept in paper in a close drawer, exhibited the animalcules in fragments, or even entire, after the lapse of eighteen days. The medico-legal importance of this fact is obvious.

The eighth number of *Guy's Hospital Reports* contains two extremely valuable papers on subjects connected with forensic medicine; the one by Mr. Taylor, on Perforation of the Stomach; the other by Dr. G. Bird, on Poisoning by the Vapours of Burning Charcoal and Coals.

Medical Statistics have received two very important acquisitions in the reports of the sickness, mortality, and invaliding among the British troops, prepared from the Records of the Army Medical Department and War Office Returns, by Mr. Henry Marshall, Deputy Inspector General of Hospitals, and Captain Tullock. The first report concerns the troops in the West Indies; the second those in the United Kingdom, the Mediterranean, and British America. Some of the results are somewhat disconcerting to previously-formed opinions. Thus it appears that

the mortality from pulmonary disease is greater in the West Indies than in the United Kingdom. In the Mediterranean the deaths from pleurisy and pneumonia are more numerous than in this country, and even than in British America, showing how little the temperature of the climate has to do with the production of those diseases. The greater mortality from pulmonary disease in the West Indies might seem to be accounted for by the bad diet, insufficient barrack accommodation, and intemperance. But in the Mediterranean the troops are very favourably circumstanced as to food and shelter; and intemperance is the effect of low wines rather than of ardent spirits. Another advantage has reference to the age of the subjects, there being a greater number above the age of twenty-five years than in British America, and therefore of an age less liable to consumption. It is remarkable that even in the mild climate of Mauritius there are more cases of consumption than in the most inclement regions of North America, and nearly as many of pulmonary inflammation.

M. Quetelet has published an interesting essay on the influence of seasons on mortality at different ages in Belgium.

After twenty-five the most unfavourable season is winter, and the other seasons follow in the order of spring, autumn, and summer; the maximum of deaths in February,—the minimum in July; the difference goes on increasing, being, at the age of twenty-five, as one hundred and twenty-five to one hundred, and becoming afterwards as two hundred and fifty-five to one hundred. After July there is an

increase of mortality,—a diminution in October,—and then again an increase; thus the mortality follows the excess of winter-cold and summer-heat.

During development, that is before twenty-five, and not including the first year, the maximum is still after January, and the minimum in July. The increase of mortality after July is greater in children than in adults.

From the first to the twelfth year the maximum mortality leaves January, and gradually, by oscillations, arrives at May. After the sixteenth year it retrogrades, and at twenty-five remains stationary in February till the close of life. The minimum from the first to the eighth year is in August; from the eighth to the twentieth in October.

As to the distinction of sexes it appears that for different epochs of life the maximum and minimum numbers, both absolute and relative, fall on the same month for either sex; and that the relations of maximum and minimum numbers for either sex are nearly the same.

But there is a great difference between the absolute numbers of male and female deaths for each period. The deaths among males are more numerous after birth, from twenty to twenty-five years of age, and from fifty to sixty-five; less numerous from the twelfth to the twentieth year, from thirty to fifty, and after sixty-five; equal from the first to the twelfth year, from twenty-five to thirty, and again towards sixty-five.

The influence of season and sex on the still-born is nearly the same as for those born alive, though less marked.

The differences between the maximum and minimum are more distinctly marked in the country than in town.*

The Gulstonian lectures of last year, delivered by Dr. Clendinning,† contained an immense mass of important statistical researches respecting diseases of the heart. It is impossible to read them without admiring the energetic industry of this able pathologist, and, I must add, without wondering at the inferences deduced from the facts collected; for statistics are ever startling us, driving us from positions which we had imagined to be most securely founded on observation and reasoning. One of Dr. Clendinning's conclusions from his tables, is that in the adult ages, and especially among males, morbus cordis is greatly more fatal than phthisis, *i.e.*, the cause of a much larger share of the general annual mortality, the excess on the side of cardiac disease being not less than fifty per cent. I may remark that *morbus cordis*, in Dr. Clendinning's use of the term, implies hypertrophy and enlargement of the organ, complicated with chronic catarrh; and also that the Marylebone Infirmary, in which the facts were collected, is attached to the Parish Workhouse. These circumstances are, I think, worthy of some consideration in estimating the inference just stated. Is it probable that morbus cordis of the nature indicated bears the same direct causative relation to the deaths of its subjects as the disorganization of the lungs to the deaths in phthisis? May not the chronic catarrh be considered

* *Edinburgh Medical and Surgical Journal*, April, 1839.

† *Medical Gazette*, 1838.

at least as influential in producing death, if not more so? Is it not probable that hypertrophy of the heart, so far from being always injurious, is in some states of the system (those, for instance, of obesity or of weak peripheral circulation,) an advantage, by reason of the increase of power in the central organ of impulsion?*

Again, as to the greater frequency of morbus cordis than of phthisis, might not such an institution as the Marylebone Infirmary be expected to have a larger proportion of persons advanced in life than of those at the ages which are ravaged by phthisis? and may not this in part account for the comparatively small ratio of deaths from the latter disease?

Dr. Clendinning states that a large proportion of the cases of morbus cordis presented serous effusions; but he does not specify whether the granular degeneration of the kidneys existed in many of the cases. Indeed this disease is not even mentioned among the complications, which must be a matter of surprise to those acquainted with the researches of Dr. Bright, who states it as "an incontrovertible fact that this disease, in its various stages, from its earliest functional derangement to the confirmed organic malady, is one of the *most frequent*, as well as *most fatal* occurrence."†

Although, from these and other considerations, we may be inclined to doubt whether the mortality attributable to morbus cordis be as high as Dr.

* I know that this is the opinion of a pathologist of high authority on such subjects: I allude to Professor Williams, of University College.

† *Guy's Hospital Reports*, vol. i., p. 370.

Clendinning has estimated it, it must be allowed that he has rendered an invaluable service to our science in the amount of important and interesting information which he has collected respecting this disease.

Since writing the above remarks I have seen the extract from Mr. Farr's letter to the Registrar General, published in the *Lancet*, of June 29, 1839. From this important document it appears that out of 148,701 deaths registered according to the New Registration Act, no less than 27,754 or twenty per cent—and four per thousand living—were registered as deaths from *decline*. Allowing that many of these might have been cases of latent organic disease in other organs than the respiratory, we must assign a tremendous number to deaths from phthisis. Now the deaths registered under diseases of the organs of circulation are only 1,596; doubtless many of the cases of dropsy, rheumatism, apoplexy, and sudden deaths ought to have been referred to this head,—but what an enormous allowance from such sources is requisite in order to bring the mortality of morbus cordis up to Dr. Clendinning's estimate. I have had peculiar pleasure in alluding to Mr. Farr's paper, as the first fruits of that system of registration for which this Association petitioned the Legislature, in accordance with a resolution which I had the honour of submitting to the Association at its first anniversary meeting in the year 1833.

I proceed to notice two or three more of the general facts adduced by Dr. Clendinning.

The hypertrophy in Dr. Clendinning's cases was

estimated by the increased weight. The average absolute weight of healthy hearts above the age of fifteen was—in males, nine ounces; females, eight ounces and one-eighth. The relative weight in males, 1–158; females, 1–149. The weight of the heart increases from maturity to old age; but that of every other viscus except the lungs diminishes. In morbus cordis the other organs are usually in a state of hypertrophy; this is also the case in phthisis, but to a less degree.

The complications of morbus cordis were numerous. In one hundred and forty-four cases, it was observed that phthisis existed in sixteen per cent; pleuritis, twenty per cent; pneumonia and pleuro-pneumonia, twenty-five per cent; pericarditis, fifteen per cent; mania, five per cent; apoplexy, eleven per cent; various diseases, twenty per cent; hypertrophy of all or several viscera, eighty-five per cent.

Dr. Clendinning's estimate of the usual condition of the heart in phthisis is opposed to that of M. Louis, and also of M. Bizot. Thus Louis observes that in only three out of one hundred and twelve cases of phthisis was there an *increase of size*, and that in the great majority the volume was diminished in common with that of the other organs.* Apparent thickening in some of the cases he referred to contraction. M. Bizot compared the dimensions of the heart in fifty-six phthisical cases with those in sixty-five cases of death from other diseases, and found that both in males and females all its proportions were diminished in the cases of phthisis.†

* *Cowan's Translation of Louis on Phthisis*, p. 36.

† *Memoires de la Societé d'Observation de Paris, tome i.*, 1836.

Even Broussais, who conceived that hypertrophy of the heart was a cause of phthisis, allowed that in the course of the latter disease it became atrophied with the other organs.

Before attempting to decide between the opposite estimates of Dr. Clendinning and the pathologists whom I have just named, it would be necessary to determine whether hypertrophy is better ascertained by weight than by measurement; if this be the case, we must accept Dr. Clendinning's conclusion.

M. Bizot's researches agree with those of Dr. Clendinning as to the smaller size of the female heart, and the increased growth of the heart with increasing years. If by pursuing different methods of investigation, the authors arrive at the same conclusion on these points, it seems difficult to understand why they should differ on that which I have adverted to.

The consideration of these statistical researches induces me to offer some remarks upon the *numerical method*, a system which has been, strange to say, productive of considerable controversy; an object of veneration to one party, of aversion and even contempt to another. One who has kept aloof from the heats and contentions which have agitated the medical world on this subject, would scarcely fail to marvel, if told abruptly, that as much doubt and strife could be elicited from mere arithmetical statements, as from the enunciation of the most hypothetical dogmas. Certainly we might expect disputes as to the registry of the numerical units, but we are not prepared for being told on the one hand, that to apply these calculations to the

elucidation of medical science, is a dangerous attempt to introduce mathematical reasoning into a province to which it is foreign, nor, on the other, that *to count* is the only sure method of establishing medicine as a science; that all medical principles, no matter how venerable from antiquity, or confirmed by the experience of successive centuries, must be considered doubtful till tested by this criterion; and that it is, in fact, a *novum organum* to be employed for all future discoveries. Into what extremes of expression the partisans of either opinion fell, may be recollected by those of my hearers who followed the debates on the numerical method in the proceedings of the Parisian Academy of Medicine the year before last.

It has been argued by M. Amador, that the process of induction is very different from numerical calculation; that as it was not by the latter method that Rochefoucauld arrived at his conclusions respecting human nature, or that La Bruyere drew his characters, no more was it adopted by Hippocrates in the construction of his aphorisms; that logic and arithmetic, or reasoning and reckoning, are not convertible terms; that in reference to therapeutics we have not to compute how many times a given remedy effected a cure, but to enquire *when* and *how* it produced this result.

It is true that in strict induction we do not count the instances collected. We associate a class of phenomena by their possession of one or more properties in common, and we assign to the group a general law, founded on the observation of every case: we do not count the individuals to determine

how many are endowed with the characteristic property, or how many exhibit a particular principle of action; for the discovery of a single case in which the former was wanting would exclude it at once from the class, and a single exception to the latter would nullify the law. The reckoning would stop with the numeration of a single unit. In like manner, when endeavouring to ascertain a relation of cause and effect, we do not calculate the number of times in which events happen in a certain order: one exception would be incompatible with the invariable antecedence and sequence, on which causation depends.

But in medicine we are unable to class facts, or predicate laws so absolutely, as when we have to do with phenomena less complete, and more open to the illustrations of experiment. We make *provisional* abstractions and principles, glad as it were to snatch at *any* guiding analogies where phenomena are so intricately mingled; to observe *any* connections among events which appear in such changing series. We do not at once reject them because of exceptions, for these may prove only apparent. *General* laws must content us when *universal* ones are unattainable. Our truths are but approximative. But the degree of generality and the comparative nearness of our approaches to the truth, are most important to ascertain; and this may be effected by studying the proportion which the exceptions bear to the rule,—counting how many and remote are the deviations from the supposed standard.

To illustrate the imperfection of our inductions, need I say how often we give a definition of

disease—that is, enumerate the characters of a certain group of cases, and soon after state in the diagnosis that not one of the characters is constantly present, and that any one or more of them may be found in cases which do not belong to the group? Need I remark that we connect a class of symptoms one moment with a particular change of structure, and in the next confess that they may occur independently of it? We are compelled to say that *generally, for the most part, in the majority of instances,* &c., morbid phenomena happen in this and that association or succession. Such phrases intimate proportions, and an insensible calculation in the mind of the observer. It is the object of the numerical method to fix their real value.

We must distinguish, however, what is rather the result of careful observation than of calculation, for these have been confounded even by the illustrious founder of the numerical method; in his defence of which he has adduced as a proof of its value the discovery of certain well known pathological laws. Thus his researches have led him to the conclusion that ulcerations of the trachea occur in tuberculous subjects only, while Laennec taught that they were more frequent in the non-tuberculous. But the truth of the former statement does not depend on counting and calculation; it involves no question of proportion. A single instance of tracheal ulceration in a non-tuberculous subject would reduce it from a universal to a general law, and then the number of exceptions might afford subject for calculation. The law (allowing its force) was deduced from M. Louis' *exact observation;* he had not allowed himself to

believe that such ulcerations existed in non-tuberculous cases without actual proof. He had examined 1200 subjects. In not one did he find ulcerations of the trachea uncomplicated with tubercles.

How should Laennec have fallen into so great an error? It is probable that his non-tuberculous cases were living subjects, who presented no signs of tubercles even to *his* acute mind and practised senses, but in whom it is most probable they really existed. Or he may have supposed the trachea to have been ulcerated when the seat of the lesion was the larynx or epiglottis. The mistake resulted from deficient or faulty observation, not from the want of *counting;* in any other sense, at least, than that counting implies or necessitates minute analysis. While Louis discovered the truth, not because he reckoned his 1200 cases, and found that not one presented the non-tuberculous ulcerations, but because he had set down only what he had actually seen, instead of what he had inferred; for in the latter operation he might, like his great master, have been deceived.

But though such a discovery cannot be adduced as the direct result of the numerical method, we may reckon the *habit* of correct observation which the latter induces as one of its advantages.

It would be waste of time to enumerate the benefits which statistics have conferred on the diagnosis of diseases, by informing us of the relative frequency with which certain lesions of organs are found in cases that have presented certain groups of symptoms, in ascertaining the prevalent lesions at particular ages, in either sex, in different tempera-

ments, and so on: but M. Louis is chargeable with a mistake similar to that which I have already noticed, when he tells us that the numerical method has enabled him to diagnosticate pulmonary tubercles in cases which afforded no physical evidence of their existence. It may be true that he has established that after the age of fifteen, tuberculous matter is always present in the lungs, if it exists in any other organ. Now, if he had ascertained that in a very large proportion of cases, say ninety-five out of one hundred, this law obtained, and that this numeration enabled him to calculate with high probability in any given case, that such an association of disease must exist, he would have been making use of the numerical method. As it is, his opinion is not a calculation of probabilities, but a deduction from an absolute law, that in all persons of a certain age, presenting tuberculous formations, the lungs are involved in the disease. What number of observations may be considered requisite for establishing such a law, is an enquiry upon which I shall not enter.

I hasten to consider the propriety of applying the numerical method to the prognosis and treatment of particular cases. Upon the latter has turned the main force of the controversy; but I shall first advert to the former. The instances are but very rare in which we can predict the issue with absolute certainty. In a vast majority we can only calculate the chances of the one event or the other, and we may do so either from the general results of memory, or from numerical tables. We may have a general impression that, according to our experience or

reading, cases of a certain disease, at a certain age, and in a certain habit, generally, or often, or sometimes recover: or we may have a register of cases analysed, tabulated, numbered, and we can use numerical terms. I need not say which would be more entitled to confidence, as well as affording more precise results; in either case an error may arise from deficiency in the number of instances observed. The tables may have been constructed on an insufficient number of instances, and thus lead to error: but the same may be alleged against the experience contained in the memory—it may not have been extensive enough. But the error is graver in the former case, because we rely more confidently, and speak less doubtfully, upon numerical statements.

The impugners of the numerical method have rested mainly upon its application to therapeutics, and they have chosen the strongest ground, whether we view the subject *a priori*, or *a posteriori*. The calculation of probabilities is properly applicable only to classes, not to individuals. Out of a certain number of men of a certain age, a certain proportion will attain a given age, but no one can predict this of any one individual. Ninety per cent cases of any given disease treated by purgatives recover,—seventy per cent only by bleeding; but this information does not help us to decide in a given case which plan is preferable. Every case is an individual, and requires a peculiarity of treatment. The pneumonia of Peter, as M. Double puts it, is not the pneumonia of Paul. This objection is of a theoretical nature. A practical one has been alleged in the fact that

the numerical statements given by different authors of the effects of the same treatment are very discrepant. Thus M. Amador says that in the cases of typhus treated by M. Delaroque with purgatives, the mortality was one in ten; by M. Piedagnel, one in seven; by M. Andral, one in six. But to this objection it would be answered by a statistician, that before admitting its force it must be shewn that the subjects were like as to age, sex, temperament, &c., and that the number of cases which furnished these proportions was nearly the same in the respective groups. It appears to me that as yet we are not in a condition to test the value of this method by actual experience, but we may consider whether the *a priori* objection be valid. With regard to this we may first ask what method is pursued in estimating the value of a remedy in any given disease? Do we measure it by the probability it offers of accomplishing a certain indication? This is a reason for *trying* a new remedy; but for estimating one that has been already employed we ask, has it fulfilled the indication, or has it cured the disease? Not once, twice, or thrice, but so many times that the desired result cannot be regarded as an accidental sequence, the favourable termination having occurred oftener in fact than among cases left to nature. The next enquiry is, what preference should be given to it over some other remedy, respecting which there is similar testimony? Various reasons offer themselves for choosing the one or the other; the greater range of experience in the relater—his known superiority as an acute and accurate observer, or as a faithful narrator—the

correspondence of his general views with our own—some *analogous* experience of our own, &c. These, although adequate reasons for adopting one plan of cure in preference to another, would not be sufficient for establishing its efficacy, or its superiority to all other methods. We must have evidence that a greater proportion of cases has been cured by it. Now this evidence may be given in such general terms as the following:—"I have found it seldom fail, compared with other methods;" "I have lost very few cases since I commenced its employment;" &c. But supposing that instead of these general expressions statements in figures had been given, can there be any doubt as to which would be more relied upon? For though even the latter would be open to the objection that the cases upon which the new treatment had been tried were of a more tractable nature, we avoid the suspicions which the former admits of, as to the partiality of the observer to his discovery, or the favourable impression left on his mind by a few recent cases.

Allowing, then, that the value of a remedy has been established by the numerical method, can we, therefore, apply it to any given case? Or to put the question in another form: it has been proved that eight out of ten cases similar to that before us have been cured by an antiphlogistic treatment, but only six out of ten by stimulants; treated by the one method, the patient's chances are eight to two, by the other only six to four: shall we, therefore, adopt the former? *In the absence of any other reason* for determining the choice, we might be glad to lay hold of one so apparently sound and palpable.

It is this kind of reason, though not numerically expressed, which leads the routine practitioner to abbreviate his labour. It would be sufficient for a hospital physician, who (if such there be) aims at exhibiting a certain proportion of cures to the cases treated, without caring about the fortunate or unfortunate *individuals*. It would answer to a military practitioner whose General might say to him, "Go into yonder sick tents and cure me a certain per centage, I cannot do with less in the approaching action." But it would not be sufficient for him who regards his patient, not as a mere unit in a future table, but as a *man*—a being, the current of whose joyous feelings, and ennobling thoughts, and benevolent exertions may be turned into the dark chasm of death, or hold on its glorious way, mainly through *his* interference,—a man whose loss would make a blank, not merely in a column of figures, but in a loving household, an admiring circle of friends, nay, in a whole community. The *individual*, then, must be considered; and because, as an individual, he has a peculiarity of organization which when deranged ought to receive a peculiarity of treatment; we must consider anxiously, and we may often, very often, succeed in ascertaining the manner in which his idiosyncrasy will modify the operation of remedies which in the majority produce a different result. We shall use the numerical method just as that of ordinary experience; it will *suggest* not *determine* the choice of our remedies.

It must appear then, I think, from what has been said, that the numerical method in therapeutics is objectionable only when misapplied, when leading

us to neglect the peculiarities of individual cases; and the objection obtains equally with the applications of *any* general rules, whether derived from statistics or not. It would be equally absurd to employ in this way an aphorism of Hippocrates, or a numerical statement of M. Louis; a maxim of Rochefoucauld on human nature, or an arithmetical calculation of M. Guerry on crime.

I shall not attempt to consider how far the pursuance of statistical enquiries is compatible with the ordinary duties of the profession, but I incline to the opinion that the majority of practitioners are better qualified for making use of the results arrived at by others than for engaging in such investigations, and that a habit of registering and computing will certainly not increase, if it do not even impair that mental promptitude which is no where more needed than at the bedside.

* * * *Nec Babylonios*
Tentâris numeros. * * *

In concluding my remarks on this subject, which have attained a greater length than I had designed, I will only venture upon an observation which, though very obvious, seems to me of some importance—that those who undertake to augment the stores of medical science by numerical researches, incur a degree of responsibility far surpassing that of the observers, who give the results of their experience in general terms. The latter we receive with various qualifications and deductions, as probabilities or approximations to truth. We allow something for the mental constitution of the writer;

something for his use of language; something for his age, and a good deal for the amount of his experience; and, above all, we view what he tells us as subject to the testing of our own investigations. But statements which come before us unarrayed in the pomp of words, neither pointed by antithesis, nor embellished by tropes; not brightened by the false light of fancy, nor warm with the glow of enthusiasm or controversy, but standing in bare bleak columns and tables, apparently in the very nakedness of truth, are received in a very different spirit. However opposed to our former opinions, there seems to be no appeal from them; there is no room for question or doubt, and we submit to them, not as to dogmas, but as to principles of the exact sciences. How needful then is it that statisticians take good heed to their calculations, and not only because their statements are apt to be received with such implicit faith, but because a mistake in one point may spread indefinitely.

Our medical literature has received some valuable additions during the past year, though their number is by no means considerable. The readiness with which an author's views may be presented to the public by means of the periodical press, must tend to restrain the issue of monographs. And although it may appear that temptations are thus offered to the promulgation of hastily-formed opinions, and imperfectly-collected facts, this evil is more than counterbalanced by the check given to separate publications. But for this, it is probable that our

library tables would be laden with bulky unreadable treatises, the results of expanding into volumes, what is now perused with satisfaction in a few pages or columns of our journals.

Among the systematic works recently published, I may specify Mr. Carpenter's "Principles of General and Comparative Physiology." The reputation which the rare excellence of this treatise has already obtained both for itself and its author, may well excuse my saying more than that it is an admirable illustration of the improved method of studying physiology. Instead of attempting at once to take to pieces the complex organisms in the higher departments of living beings, the author shows that the analysis is ready formed in the great workshop of Nature, by directing our attention to the simple mechanism of the functions in the lowest grades, and then gradually tracing the additions and complications which appear in the higher classes; the physiology of plants is thus made to throw light upon that of the animal kingdom.

To those who pursue the study of physiology on this plan, as well as to the general naturalist, the Outlines of the Animal Kingdom, now publishing by Professor Jones, will afford great assistance.

Some monographs of great value have been devoted to particular maladies, as well as to natural groups of diseases. Such is Dr. Willis's excellent volume on Urinary Diseases, which presents a well executed compendium of the most recent researches in the pathological chemistry of the urine, as well as of the history and treatment of this class of maladies. Nor has it merely the merit of an able com-

pilation; it bears the marks of original observation, and of a judgment at once sound and acute. From the distinguished toxicologist of Edinburgh, the profession has received a most welcome volume on "Granular Degeneration of the Kidneys." From no other investigator (always excepting the discoverer of this disease,) could a work on this subject have more appropriately proceeded, inasmuch as Dr. Christison was one of the first in this country to follow in the track first struck out by Dr. Bright. We only regret that the author, fearing to take an unwarrantable liberty, should have refrained from adopting a name for the disease, which all Europe has agreed in conferring upon it. Why not speak of Bright's Disease of the Kidneys with as much propriety as of the Rete Malpighianum, or of Willis's Circle? I may state, in passing, that Dr. Christison estimates the proportion of dropsical cases dependent on this disease, as three-fourths of the whole. We are indebted to him for pointing out and insisting on a fact overlooked by most writers on the subject, but of great practical importance, viz., that the coagulability of the urine diminishes in the advanced periods of the disease.

Dr. Ferguson, the accomplished Professor of Midwifery at King's College, has favoured the medical world with a masterly treatise on puerperal fever, published as the first part of a series of essays "On the most Important Diseases of Women," and therefore to be considered as an earnest of future contributions to the riches of our literature. The study of this intricate malady will in future be greatly facilitated by the lucid arrangement of its

phenomena under four principal groups, constituting the peritonœal form, the gastro-enteric, the nervous, and the complicated; all these forms are traced to the same source, a vitiation of the fluids. The causes of this vitiation are introduced into the circulation by the uterine veins, and originate either in mechanical injury of these vessels, or in the noxious matters with which they are in contact on the inner surface of the uterus. According to Dr. Ferguson's theory the several forms owe their differences to the circumscription or diffusion of the poisonous action.

To Dr. Roe we are indebted for a useful compilation on hooping cough. This author extols hydrocyanic acid as the most efficient remedy. Dr. Rowland has published a work on neuralgia, rich in valuable facts and observations, both as to the diagnosis and treatment of this often intricate, and not less often intractable malady.

Mr. Pereira, we are glad to see, has published the first part of his *Materia Medica*, a work for which he had manifested the highest capabilities in his admirable lectures, published some time since in the *Medical Gazette*.

Dr. Baron has completed his *Life of Jenner*, including the history of vaccination, a work that may be justly considered a masterpiece of biography, and, as such, honourable alike to that discovery and its immortal discoverer.

Guy's Hospital Reports have continued to maintain their character, and to reflect lustre on the institution from which they emanate. I have already adverted to some of the later contributions, and

must now content myself with directing attention to the laborious researches of Dr. Bright on abdominal tumours, and of Dr. Guy on the pulse. It is to be hoped that the medical officers of other hospitals may, ere long, give similar proofs of their appreciation of the opportunities for observation afforded by their appointments. The late numbers of the *Cyclopædia of Anatomy* have gone far towards compensating, by their great merit, for the unavoidable tardiness of their appearance.

In this brief bibliographical summary I must not forget to include a work, of unpretending dimensions indeed, but full to overflowing of useful medical information, viz., *The British Medical Almanack*, edited by Mr. Farr. Among the most valuable articles I may specify the History of the Medical Profession in England, drawn up by the Editor; it exhibits an extraordinary degree of research.

The assistance afforded to the student in the present day by pictorial illustrations, is well exemplified in Dr. Willis's Plates of Cutaneous Diseases, and in Dr. Boisragon's Osteological Drawings, both of which works are characterised at once by faithfulness and ability of execution.

Of the last publication that I can advert to, it is tantalizing to speak with the brevity to which my space compels me. On some subjets, "*satius est silere quam parum dicere.*" I allude to the *Medical Notes and Reflections* of Dr. Holland. This eminent physician, while engaged for twenty years in active practice in the metropolis, and thoughtfully pondering "that which before him lay in daily life," has not been inobservant of the progress of general

science. In maturing his views on points, both of speculation and practice, he has not trusted solely to the facts which have fallen within his own ample range of experience, but has availed himself of the fruits of his various erudition, comprehending alike the observations and aphorisms of the earliest fathers of medicine, and the reports and experiments of the latest enquirers. A fine vein of enlightened scepticism runs through most of his speculations, reminding us of the spirit with which all medical doctrines, though as ingeniously wrought out and as carefully guarded as his own, should ever be received. The chapters devoted to matters of practice will be read with peculiar satisfaction by the younger members of the profession, glad to rest upon maxims carefully deduced from the experience of one who has long and successfully contended with cases similar to those which so often baffle their endeavours.

From contemplating the steady onward course of the pilgrims to the shrine of true knowledge, we might glance at the wanderings of those who have been tempted to offer their worship to other deities, or rather to malicious sprites, who, by holding out a few false lights, a few semblances of science, have tempted their votaries to adoration, apparently for the very purpose of mocking their enthusiasm, and turning their gifts into ridicule. But having occupied so much time with points of orthodox belief, I cannot tax the patience of my hearers by such remarks as I could offer on the heresies of homœopathy and animal magnetism; besides, have they not been the subject of poignant animadversion

in Dr. Malden's admirable Address? And has not Dr. Bardsley, in a recent pamphlet,* handled them with his accustomed learning, good sense, and ability? I shall content myself with observing that we might marvel how doctrines so absurd should arise, or at least hold up their heads in the present age, when so much light is abroad, did it not seem a part of the plan of the universe that errors should still be permitted to spring up, even in times of great illumination, as if to lessen the pride of man, by reminding him that he is the same fallible creature as in the days of darkness and ignorance

> *"Usque adeo res humanas vis abdita quædam*
> *Obterit."*

A distinguished member of this Association, who was one of the first to tear off the mask from one of the false sciences just adverted to, soon after it had begun to impose somewhat on the public mind of this country, has for some time been displaying a manly zeal in stirring up the profession to a struggle with Empiricism. This destructive monster, sprung from a barbarous age, shows no signs of decrepitude in these days of refinement, but rather rejoices in the vigour of a lusty manhood, culling its victims almost equally from among wise men and fools,—not less from the ranks of the delicate, the high-born and highly cultured, than from the coarse and illiterate vulgar. Many have flattered themselves that they might see it sink into gradual decline,

* *Observations on Homœopathy and Animal Magnetism, &c. &c.* By James Lomax Bardsley, M.D., F.L.S., &c.

and die a natural death; but of this there is little probability while it finds so large a store of its proper food in the ignorance and credulity of the public. If *we* are to witness its downfall let us indulge no delusive hope of its tottering from its own weakness and decay: it must come to a violent end, and by the hands of a legal executioner. Dr. Cowan has not been sparing of his courage and energies in contending with this gigantic evil, and I trust that his eloquent appeals for assistance will not long be unanswered, either by the general profession or by that important section of it comprised in this Association. As for the public, he will, I fear, still have to cry out upon them,—*O stulti! quænam hæc est amentia! O sæclum insipiens et inficetum!*

O miseras hominum mentes, O pectora cæca!

The past year has given birth to two events of great importance to the profession in this country,—the issue of certain new regulations by the College of Physicians, and the announcement by the University of London of the qualifications requisite for obtaining degrees in medicine from that body. From the manifesto of the Royal College it would seem that the regulations are not of recent origin, though they appear new to those who have not had the opportunity of watching the progress of reform in that time-honoured institution. Considering the liberal terms upon which candidates for the diploma in medicine may present themselves to the Board, and the judicious plan of examination proposed, we cannot but think that the College has done itself

tardy justice in deferring the publication of its rules on this subject. Whether the College would have deemed it needful at the present time "to vindicate its claim to be the source of professional honour," had it given an earlier notification of the alterations which we are now informed that it has "for some years past found it necessary from time to time to make," I leave to the speculation of others. We can scarcely doubt that to many it will be a great temptation to receive their honours from an institution associated with so much that is venerable and glorious in British medicine, being ennobled by such names as Linacre, Sydenham, Harvey, Willis, Radcliffe, Mead, Baillie, not to mention the illustrious living.

The University of London, with much wisdom, published a sketch of its proposed regulations before finally determining upon them. This virtual appeal to the profession reflected honour upon the Senatus, showing, as it did, that in legislating they did not wish to depend on the mere arbitrary possession of power, but rather to consider themselves the representatives of the profession throughout the country, and, as such, to be ready to be in some measure influenced in their regulations by the wishes of their constituency. The result of this proceeding has been a code of regulations as free from objections as could be at all looked for in such a document. It forms no part of my duties to criticise the details of the plan; I shall, therefore, content myself with pointing out that provision has been made for ensuring a respectable amount of general information in the candidate

by what is called the *matriculation examination,* in which he will be questioned in mathematics, natural philosophy, chemistry, natural history, and classics. Assuredly no one who looks over this part of the scheme, will think that too much is required. Before taking the degree of Bachelor in Medicine two examinations must be passed ; the subjects of the first being the more elementary branches of medical science, as anatomy, physiology, chemistry, botany, materia medica, and pharmacy ; those of the second being physiology, general pathology, general therapeutics, hygiéne, surgery, medicine, midwifery, and forensic medicine. Between these examinations there must be an interval of two years. The examination for the doctorate comprises intellectual philosophy, logic, and moral philosophy, as well as medicine. The candidate must have previously taken his bachelor's degree, or have graduated in medicine or surgery at some recognized University, and since taking such degrees must have been engaged some years in clinical study, or in the practice of his profession. At all these examinations honours and substantial rewards may be attained by aspiring students.

It is impossible to look over the requirements of the University, and not to feel convinced that great pains have been taken to secure the formation of a highly respectable and well-educated body of practitioners.

It is my agreeable duty to congratulate the Association, that our science has sustained fewer bereavements by the hand of death during the last

year than in former years. It is true the obituary embraces one great name for whose loss, had t occurred at an earlier period, we should have found it but a poor compensation to reckon the paucity of those which accompanied it. Had this illustrious individual been removed when the *Phlegmasies Chroniques* or the *Examen des Doctrines Medicales* were yet fresh in our remembrance, we should have mourned as for one who seemed destined to achieve reforms and improvements in medicine even greater than those for which the science was already indebted to him. But alas! for human expectation and contemporaneous renown! M. Broussais survived much of his fame and much of our hopes! Various are the circumstances under which the sons of knowledge yield up the powers with which they have been entrusted; some are visited by death in the enjoyment of that repose which their past deeds and now failing energies render at once allowable and becoming; some when encouraging others to the perfection of those schemes of improvement to which they had devoted the vigour of their youth and manhood; others, toiling to the last, sink on the field of their labours with their sickles in their hands and their sheaves around them! Broussais was of too ardent a temperament to give up exertion or even controversy while any strength remained to him,—but latterly he had changed the scene of his labours. He who had been once listened to with such profound reverence by crowds of enthusiastic pupils, and proclaimed as the founder of medicine on a new and imperishable basis, could not brook

the indifference and opposition which his doctrines afterwards met with, and he betook himself to another department of philosophy. He was in the last few years oftener to be found in the Acadèmie des Sciences Morales et Politiques than in that of medicine, and some have gone so far as to say that his medical life terminated with the publication of the last edition of his *Examen* about 1830. It is not wonderful then, that the hiatus left by his departure has been less marked than it would have formerly been.

But I must hasten to give a brief sketch of the career of Broussais. He was born at St. Malo, December 17, 1772. He imbibed his first lessons in medicine from his father, with whom he remained till his twentieth year, when he joined the army as an assistant-surgeon. Having served ten years he repaired to Paris, where he studied, and in due time took his degree as D.M. in the eleventh year of the republic. In 1803 he rejoined the army, and served in the campaigns of Germany, Holland, Spain, and Italy, till 1814. He then became Physician and Professor at the Military Hospital of Val-de-Grâce, and in this capacity promulgated those opinions which procured him so much celebrity. His ardent pupil and admirer, M. Bouillaud declared in his funeral oration that posterity will perhaps speak of the oracle of Val-de-Grâce, as we now speak of the oracle of Cos!*

In 1831 he was appointed Professor of General Pathology at the Academy of Medicine. His death

* *Gazette des Hopitaux*, Dec. 1, 1838.

took place at his country house at Vitry, November 18, 1838. A long account of his disease, which was cancer of the rectum, may be found in the *Gazette Medicale,* drawn up by his friend and professional attendant, M. Amussat.

Some of the characteristics of Broussais' disposition have been traced to his province,* the same which produced Abeilard, Descartes, Chateaubriand, and La Mennais. The Bretons are said to be distinguished by a boldness that often runs into hardihood, a fervour amounting to enthusiasm, and firmness carried out to obstinacy; they are naturally contentious and intolerant. These qualities, allotted in no slight degree to M. Broussais, were rather heightened than kept under by his education, which was very imperfect,—by the life which he afterwards led,—and by the times in which he lived. In camps and campaigns he did not learn forbearance towards an adversary; in the days when national glory and vanity were at their highest pitch, and when young France was to be a pattern to the regenerate world, it is no wonder that he exulted in the overthrow of ancient opinions, and that having instigated an entire revolution in the republic of medicine, he aspired to a perpetual dictatorship.

When he commenced his labours, the minds of men were ready for a great change. A strong preference for the results of observation to those of mere theory had been already felt. Moreover, anatomy had already discovered the inflammatory lesions in febrile diseases, and there was only

* M. Guerin, *Gazette Medicale,* Dec. 1838.

wanting some one of sufficient boldness to make war upon the old system, to ensure his being surrounded by a host of partizans. In his conflicts with the ontologists, as he delighted to designate the maintainers of the essentiality of fevers, Broussais came off victorious, mainly because he professed to have founded his own doctrines on rigid observation, and especially on morbid anatomy. By and by his own system began to be assailed by his own weapons: it was found that he had generalized too rapidly, and that the very facts on which he so prided himself had not been collected with the requisite exactness; a thing not much to be wondered at, when it is remembered that they were derived from his military practice. It was now *his* turn to defend himself behind the ramparts of speculation, which however were daily subjected to the patient undermining operations of the pathological anatomists—the Laennecs, the Rostans, the Andrals, the Chomels, the Louis'. In his desperate efforts at defence, while he manifested the force of his genius, and his dialectic prowess, it is to be regretted that he often appeared less mindful of the interests of truth than of his own peculiar doctrines, and that he descended to personalities unworthy of his fame and station. His impatience of opposition, and his propensity to vent the anger excited by adverse facts, upon those who discovered and promulgated them, are exemplified in the critique on the unexceptionable researches of M. Louis, which he publisued in the third edition of his *Examen*, and which was successfully replied to in the *Examen de l'Examen* of the latter author.

I should do injustice to the memory of M. Broussais, were I to conclude this brief notice of his character, without stating that, in the private relations of life, those peculiarities which rendered him so obnoxious as a lecturer and writer, entirely disappeared. In these, it is allowed even by his adversaries, that he was marked by simplicity, gentleness, and affability.

As the turf is yet fresh on the grave of Broussais, it will be congenial to our feelings to recall some of the permanent benefits which our science received at his hands. The subjects in connection with which his name should be gratefully remembered, are the chronic inflammations in general, and the acute diseases of the mucous lining of the digestive tube, both as primary, and as complicated with fevers and other diseases. "Until this writer," says Dr. Prichard in an address which must be remembered by most of my hearers, "drew the attention of physicians to the frequent existence of irritation and of inflammatory diseases in its structure, the intestinal tube had been too much looked upon in this country as a mere drain or outlet, which might at all times be scoured with impunity by the most drastic resinous and mercurial purgatives."* He is also to be remembered for having directed our attention to the frequent complication of inflammatory states with structural disease. These subjects will recall his name long after his dogmas upon irritation and sympathy shall have

* Retrospective Address, delivered at the Annual Meeting of the Association in Oxford, in 1835.—p. 9.

been forgotten. In fact, what he learned and taught as the result of actual observation, remains; but his favourite system, his *corps de doctrine*, has passed away.

When the observations of a writer have been so generally adopted as to be absorbed into the general mass of truth, and wrought as it were into the texture of every mind, there is more danger of forgetting their source than if they had been less approved, for then, if remembered at all, they would have been connected with one individual as his own peculiar opinions and property. Every tyro can tell that Broussais denied the essentiality of fevers; that he considered them sympathetic with local inflammation, the seat of which was the gastro-enteric surface; that disease was a *plus* or *minus* state of vital action; that general debility was a misconception; that specific diseases have nothing specific in their nature, but in their causes only; that the heterologous formations are the effects of sub-inflammation of the white tissues; and that chronic disease and chronic inflammation are all but convertible terms. These and many others of the peculiar and exclusive doctrines of M. Broussais, he can refer to their author, because they have been introduced to him in connection with that name; but he is probably not aware that when carefully examining a case of dyspepsia, in order to ascertain whether chronic gastritis is the cause of the symptoms; that when applying leeches to the abdomen in a case of diarrhœa, or to the infra-clavicular region in incipient phthisis, or to the margin of the

anus in dysentery; that in prescribing iced drinks, farinaceous food, and leeching or counter-irritation to the epigastrium, for a case of hard dry cough, with a red shining tongue; or a similar practice in the gastric irritation which aggravates so terribly the sufferings of phthisis and chronic bronchitis; in short, that when employing some of the most familiar rules of diagnosis and treatment in some of the most common cases,—he is not aware, I say, that he is making use of knowledge for which the profession is indebted to M. Broussais; for these and many other points are now taught as established principles, and as belonging not to one but to all minds. But in this ignorance or forgetfulness of the source of valuable truths, there is the highest honour which can be rendered to human intellect. How many heartburnings, what mortification and disappointment, might have been saved to discoverers, could they but have viewed in this light what they considered as ingratitude or indifference to their claims; could they but have reflected that doubtful doctrines and questionable inventions are those of which the paternity is most certain, and that when truths are so generally received as to be passed from one to another without the addition of the author's name to warrant their authenticity, or to excite attention and enquiry, they have attained consummate glory.

Having now brought to a conclusion this imperfect survey of the medical events of the past year, I might endeavour to make up for its deficiences by speculating on the future progress of our science,

encroaching, as it were, by anticipation on the topics of my successors in this honourable office. This indeed would be safe ground for me, at least for the *present*, but I could not count upon the continued patience of my audience, already unduly exercised; nor can I lay claim to the "mystical lore" by which "coming events cast their shadows before." I could only adopt the vague language common to all uninspired soothsayers, and auspicate in general terms either prosperity or reverses; but I must confess that in the tissue of my prophetic web the brighter colours would prevail. If the future may be gilded by the past, if we may calculate on a progression of medicine for the next forty years proportionate to that which has marked the present century, I scarcely know what degree of expectation would be extravagant; for the same space has witnessed the development of the anatomy of tissues, the establishment of laws of organization before undreamed of, the creation of chemistry and its manifold applications to physiology, the revived and improved use of the microscope as an instrument as well of pathological as of physiological research, and Laennec's immortal discovery. In anticipation of the time when these and other great parent truths and discoveries shall have brought forth their kind, we are almost tempted to exclaim,

> *"Jam * * * redeunt Saturnia regna,*
> *Jam nova progenies cœlo demittitur alto."*

But whether or not these bright dreams shall be realized, we may be assured that Medicine will be

true to herself, to her children, and to the human race. Where arts and sciences have prevailed, she has never been wanting; she added her Hippocrates to that marvellous constellation which brightened the age of Pericles, and the name of her Celsus yet sheds lustre on the Augustan æra; she accompanied the sages who, driven from the ancient abodes of learning, took refuge among the Arabs; of the lights which glimmered in the dark ages, hers were none of the feeblest; and when knowledge once more rose upon the earth, her sons were among the earliest

"To hail the dawn and bless the coming day."

How they used that light, and how their successors profited by the Baconian philosophy, is not to be represented in a few επεα πτεροεντα. I can only say that we are now enjoying the results of their labours; that from the retrospect of the past year, it is plain that our contemporaries are diligently adding to them, and that we may boldly promise that the chroniclers of other years will have to tell of greater things than these. In speculating as to what department of our science presents the fairest prospect, it appears to me that we have reason to expect most important results, both theoretical and practical, from the investigation of the tissues, the blood, and the secretions, by the combined help of the microscope and chemical analysis. Such researches seem calculated to open up new views as to the connection between present palpable derangements of organs and functions, and long-existing but latent

faults in the general system, in other words, between diseases and diatheses. If we except those affections, which manifestly result from a temporary disorder of innervation and contraction, and those exanthemata and other febrile maladies referable to the recent introduction of a morbific cause from without, how many acute diseases ought to be regarded as the sudden abrupt expression of evils which have been long working in silence! Could we but separate these chronic predispositions from those of a more transient and more inscrutable nature induced by atmospheric conditions, we should learn much as to the varying forms of local diseases, and much as to the peculiarities of individual cases. Discoveries on these subjects will, if we mistake not, require ere very long an entire re-casting of our pathological systems.

But I must now conclude, and I cannot do so in a manner more agreeable to myself than by thanking my hearers for their patience, and at the same time expressing my fervent wishes for the continued prosperity of our Association, not only for the sake of the benefits which it is calculated to bestow alike on the profession and on the public, but also because I know that it would be the highest compensation that could be desired by that distinguished individual, who not content with the toil of laying the foundations of this institution, has been so liberal of his talents and labour in raising and consolidating the superstructure. Could we severally as members but catch a portion of his energy in carry-

ing out the various objects of the Association, I know not what limits could be set to its influence. He might then say to us—

> *" His ego nec metas rerum nec tempora pono,*
> *Imperium sine fine dedi."*

ARTICLE III.

THE

RETROSPECTIVE ADDRESS IN SURGERY,

From July, 1836, *to July*, 1839,

DELIVERED AT LIVERPOOL, JULY 24th, 1839.

BY J. H. JAMES, ESQ.,

Surgeon to the Devon and Exeter Hospital.

THE admirable address delivered before this Association three years ago by Mr. Crosse, although embracing every department of medical science, yet from its being more particularly devoted to that of surgery, produced probably an impression among a large proportion of the members that it would be desirable occasionally to call on a surgeon to furnish a retrospect of the improvements to which his attention is chiefly devoted. In accordance with this feeling the Council determined that such a measure should be adopted this year, and they did me an honour I feel too little conscious of deserving, when they expressed a wish that I should carry the plan into effect. The learning and research, no less

than the judgment and discretion, which the author of the address I have alluded to exhibited, ought to have made me very diffident how I undertook a task the execution of which, I am aware, will provoke a comparison unfavourable to him who now addresses you. I cannot but feel that in the populous cities with which this kingdom abounds, there are many men whose abilities, science, and opportunities, render them far more capable of executing it than myself, before whom, as judges, I must now stand, not without apprehension. The application to me, however, was made in terms at once so flattering and so strong, that I felt it was my duty to endeavour to overcome the difficulties before me, and, as far as lay in my power, to do justice to the undertaking.

Perhaps of all the objects which this Association is calculated to promote, one of the most useful is that embraced within the scope of these addresses. The profession requires to be informed, amid the immense mass of matter continually presented to it in this and foreign countries, of what is really new, and, if new, is valuable, or appears to be so. The journals, so ably edited here and elsewhere, while they are themselves useful channels of original information, effect this object also in a great degree; still their design is not so strictly limited to this purpose, and no one expects to obtain from them such comprehensive, and, at the same time, such condensed views of the state of medical science, as the addresses, or rather reports of this Society present.

With every endeavour to avoid superfluous matter, to offer the proper statements with the utmost brevity,

and to spare unnecessary comment, it will still be impossible, within reasonable limits, to notice every particular subject which offers itself as a novelty in practice or in theory; it will therefore be my object to select from the numerous topics which come into view, those which from their intrinsic importance seem especially deserving of our regard, and I must beg to add that, even though confining myself to these, it will be out of my power to illustrate them by the extensive and laborious research evinced by many of my predecessors; the Society will however, I hope, make full allowance, not only for the deficiencies arising from that want of leisure which I must plead in common with my predecessors, and for the insufficient opportunities for reference afforded in a city of limited size and remote situation, but also and more especially from painful circumstances peculiar to myself, which especially demand your sympathy and forbearance.

It is not perhaps very material that the report should commence with one subject in preference to any other, and this being so, I shall take one which has always engrossed deep attention, and on which various important memoirs have lately appeared; I mean *Hernia*. It is unnecessary to recal to your attention the various plans which have been proposed and practised, both for the better support of these protrusions, and for their permanent cure, and which have been already stated by Mr. Crosse;*

* Retrospective Address, 1836.

but it may be allowable to express regret, that the lapse of three years should have failed to produce information from our own country more decidedly tending either to establish the utility of these methods or the reverse. In the second number of the *Reports of Guy's Hospital,* Mr. B. Cooper has related a case of femoral hernia in which he operated in the manner so strongly recommended by Mr. Key.* It were much to be wished that we had more facts to reason upon in this matter. If the operation has been extensively tried, we are not acquainted with the results, and it remains upon record that the judgment of many of the greatest surgeons, of all ages, has been peremptorily declared on the propriety of making the opening of the sac; indeed the very period which saw the proposition advanced in this country by the gentleman alluded to, whose abilities every one respects, also produced a memoir from another of the highest talent and experience,† bearing on the relief of hernia which had been inadvertently returned with the sac unopened, and the strangulation at the neck continuing. As far as my own limited observation goes, it would lead me to say that the reduction without opening the sac, safe only when there is no stricture at its neck,‡ may be attended with great difficulty in many cases; and I must likewise express my persuasion that the mere opening is not very frequently followed by dangerous results when the intestine has not been

* I believe it was first suggested by Sir A. Cooper.

† Dupuytren; *Leçons Orales, tom. i., 557.*

‡ Since, as M. Dupuytren has shewn, in hands not greatly experienced, the reduction may be effected without removal of the cause of stricture.

allowed to get into a bad state, and when there *is* any doubt on this point, it may hardly be proper to omit it.*

A very important improvement has been introduced by Dr. O'Beirne, of Dublin.† He is of opinion (whether correctly to the extent in which he entertains it, may be doubted,) that in all cases the return of the prolapsed portion is chiefly prevented by the presence of flatus imprisoned in the intestine, and that a contracted state of the rectum prevents the liberation of that in the lower part of the alimentary canal; to counteract this, he introduces an elastic tube, sixteen inches in length, which, traversing the rectum completely, gives vent to the imprisoned air, and enables him, by injections, when necessary, to empty the bowel of fœces also. By these means he has succeeded in eleven out of sixteen cases, and it must be added that in those in which they failed, he mentions the existence of causes which may account for the failure. Now, without admitting the complete correctness of all Dr. O'Beirne's views, it cannot be disputed that the distension of the alimentary canal, both in the prolapsed portion and elsewhere, and whether by flatus or fœces, or both, is a great obstacle to the reduction, and it is probable that the modes of

* I ought not to pass over the mention of a valuable statistical paper on hernia, published in the same Reports, No. vii., by the late Mr. King. The most remarkable inference which at present may appear deducible from the facts is, the increased disposition to become strangulated as the hernia has been of longer standing; but there are other points adverted to, well worthy of attention, especially the extent and often *irreparable* nature of the peritoneal inflammation which occurs.

† *Dublin Journal*, September, 1838.

emptying the canal hitherto resorted to, fall very far short in efficiency of that he has proposed. It is also not improbable that injections, applied so high in the canal, may also tend powerfully to excite the peristaltic action, and thereby to draw up the bowel, an effect which they produce in common with the tobacco injection; but while the latter, should it fail to effect the reduction, leaves the patient in an unfavourable condition for the operation, the plan proposed by Dr. O'Beirne seems calculated decidedly to increase his chance of recovery. I need hardly say that if this mode answers as well in the hands of others, it will constitute by far the most important and useful improvement in the treatment of strangulated hernia which any period has produced. It ought to be stated that Mr. Phillips, of Bristol, has communicated a case in which it succeeded,* and also, perhaps, that I have myself tried it in two instances, in the first with striking success, in the other it failed from causes which do not affect its character. Its results in other hands have not been made known hitherto, as far as I am aware, except in some of the cases mentioned by Dr. O'Beirne himself.†

Additional instances are narrated from time to time of internal strangulation from loops of mesentery, the bands of adhesions, and other causes.‡ It is

* *Medical Gazette.*

† In a conversation I had the pleasure of having with Dr. O'Beirne at Liverpool, I find that more extended experience has confirmed the utility of this treatment; for particulars I may refer to the *Lancet* of July, 27th, 1839.

‡ In the *British and Foreign Quarterly* for April, 1837, is an abstract of several very interesting cases by Rositanski.

probable such occurrences are more frequent than has been commonly supposed. Two fatal cases of this kind have fallen under my own observation.

Hydrocele.—If the operation for strangulated hernia according to Mr. Key's method has been little tried, because probably surgeons are naturally averse in any case where life is at stake to incur the responsibility of deviating from plans sanctioned by long experience, it is not so in cases of minor importance, when we find them always willing to put any proposal to the test which comes advantageously recommended. Under this head may be classed the new mode of operating for Hydrocele (which has further been extended to cases of fluid collections within the abdomen), and appears to have been attended with considerable success.* The plan, it is well known, consists in making one or more, and commonly several small, punctures into the tunica vaginalis, and repeating them at short intervals. The fluid is effused into the cellular membrane, and absorbed by it. When the operation succeeds, the quantity secreted in the tunica vaginalis notably diminishes, and gradually ceases altogether, so as to effect a radical cure; it is, however, to be regretted that this rarely happens in advanced life, when it would be more especially desirable to avoid the necessity of the severer modes of operating, and it is a plan which my own experience would lead me to say often fails, even at earlier ages; indeed it is chiefly adapted to cases where the tunica vaginalis has undergone little change.

* Lewis, *Lancet*, May 7th, 1836. King, *Medical Gazette*, vol. xxi., p. 56. Travers, *Medical Gazette*, vol. xix., p. 737. Keate, *ibid*, 789.

Strictures.—M. Lallemand* has introduced a plan of treatment for Strictures of the Urethra, by sudden dilatation as he terms it. This consists in passing a sound of the largest size which can be introduced, and keeping it in the urethra until it is found to move freely, when it is to be replaced by a larger, which, according to his statement, will probably be in about two hours, and this is to be persevered in until No. 14 can be introduced. The patient is to be prepared by quiet and a cooling regimen. I conceive that in many cases this plan will not be borne, but when it can be, is certainly calculated to save much time.†

M. Lallemand‡ has also brought into use an ingenious mode of applying lunar caustic to strictures, so as to act on their whole surface instead of the commencement only. The principle, as far as I can see, is that long since introduced by Mr. Whately, who, however, used the pure potass, and in a manner less definite. Mr. T. B. Curling§ has spoken of it in very favourable terms in a memoir read at the Hunterian Society last December; but it is evident that to very close strictures it is not applicable. The instrument by which this is effected

* *Gazette Medicale*, No. xxvi., *Juin*, 1836.

† While on this subject, I may be permitted to mention that a pupil of my own, Mr. Barham, has contrived a simple and advantageous plan of carrying into effect M. Dupuytren's treatment of close strictures by pressure, and useful in any case where instruments are to be kept in the urethra. He suggested the adoption of two elastic tapes connected with a T bandage and acting on the bougie, which, by keeping the point constantly bearing on the stricture, greatly assists its effect.

‡ *Gazette Medicale*, No. xxvi., *Juin*, 1836.

§ *Medical Gazette*, January 19th, 1839.

is now known to many, but as it is admirably calculated for the object in view, it may not be amiss to say briefly, that a small stick of caustic is lodged in a long canula, and protected by it until it has entered the strictured portion, and then by an ingenious contrivance is brought into complete contact with that part of the canal.

Lithotomy and Lithotrity.—Perhaps no period of medical history has witnessed more earnest endeavours to prevent or relieve the evils of calculous complaints than the present century, whether we regard the light thrown on the function of the organs of urinary secretion, or the management of the stone when formed. The reduction of the calculus in the bladder, if thought of by the ancients, was not brought into use, and it remained for the ingenuity of modern times to devise instruments by which this might be accomplished. Sir P. Crampton, however, states that Sir Herbert Sydney, Lord Deputy of Ireland, was operated on in this fashion two hundred and seventy years since, and that Col. Martin, in 1800, constructed an instrument for this purpose, by which he was cured.* Mr. Stanley also mentions in his Hunterian Lecture that lithotripsy was not unknown to Ammonius.† I do not propose to offer any comment on that operation itself, but it is right that I should advert to a point of no small importance, namely, the relative value of the two operations, by incision and by crushing, since two documents have lately ap-

* *Dublin Quarterly Journal.*

† Hunterian Lecture, 1839.

peared on the subject entitled to every attention, and neither are *ex-parte* statements.

The first* (although of a date prior to 1836,) I may mention, is a prolonged and interesting discussion, formally conducted at the Royal Academy of Medicine in Paris, in which the arguments and experience of the most able advocates of both methods of operating were powerfully brought forward. A medical meeting, however, never expresses its judgment as such, and the chief advantages to be gained from the proceeding, consist in the opportunity afforded for reasoning on a large collection of facts forcibly adduced and eagerly discussed.

The second to which I allude is a memoir by Mr. Key,† and whether we regard the judgment and experience, or the impartiality of its author, it must carry much weight. We may collect from this document the following opinions:—First, that if for argument's sake we were to suppose the case of all patients being submitted to the one operation or the other, most would be saved by lithotomy; secondly, that lithotomy is especially adapted to young subjects (a point, however, which has been denied); and thirdly, that the chief advantage of lithotripsy arises from its early performance, while the bladder is still healthy, and the stone not large, the reverse of which too often occurred formerly, from the prejudicial but not unnatural timidity of the patient. This judgment of the relative value of the two operations I am aware is consonant with

* *Rapport et discussions à l'Acadamie Royale de Medecine, sur le Taille et Lithotritie, &c.*, 1835.

† *Guy's Hospital Reports*, No. iv.

that of many other surgeons, but in the present instance it is declared by a person whose skill in either mode is fully acknowledged, and therefore no abatement need be made for prejudice. It is evident that to draw a perfectly fair comparison between the two methods, all cases of lithotomy in the adult should be excluded which would not be admitted as fit for lithotrity, whether from the state of the bladder or the size of the stone; and even then the operators themselves should be as remarkable for science and dexterity, as those undoubtedly are who have hitherto performed the new method. But the results of lithotomy at present collected as the basis of calculation, have been taken from cases operated on with very little selection, and often by persons of uncertain skill; at all events, statistical documents show that nothing can vary more than the relative mortality in different places.

I cannot allude to this memoir without expressing my high sense of those valuable volumes published by the physicians and surgeons of two of our great metropolitan hospitals;* these, together with the numerous reports and statistical statements in our own *Transactions*, of which we may be justly proud, are, it is to be hoped, only examples which will be largely followed by others. Little doubt can be entertained that if the mass of materials which the institutions of this kingdom afford, were to be accurately registered, and from time to time made public in a condensed and well-digested form, we should ere long be enabled to exercise a sounder judgment on many points still disputed, whose obscurity can be cleared up in no other way; on others much important in-

* St. Thomas's and Guy's.

formation would be contributed, and many valuable discoveries, the knowledge of which is now confined to a mere locality, would be rendered extensively useful. Hitherto the improvements in medical science have been effected chiefly by the labours of individuals, and the fruits of their observations and exertions have, in truth, greatly enriched us. This must still continue, for the results of private practice will hardly ever appear in any regular form, but the force of union may be made to co-operate in the way adverted to, much more extensively than heretofore, in accumulating masses of facts, when it is not too much to hope that the uncertainty of medicine may be less a reproach than it has hitherto been.

But to return; it may be safely affirmed that the prevention of this disease has ever attracted far less notice than the operations for its cure, although beyond all question more beneficial to mankind. A very important addition to our knowledge in this department is however contained in a brief memoir by Mr. C. Hutchison,* in which he brings forward strong reasons for the belief that a sea life powerfully contributes to prevent the calculous diathesis, and other prophylactic measures are by him suggested worthy of consideration.†

Vascular System.—The department of surgery which relates to the Vascular System, always full of interest, does not cease to afford us new facts.

* *Medico-Chirurgical Transactions*, vol. xxi.

† In the *Medical Gazette*, vol. xxii., p. 764, is a case of the successful removal of an immense stone, weighing five ounces and a half, by Mr. Fraser, Surgeon to the Rifle Corps.

The treatment of *varicose veins* by ligature around the veins, tightened on pins, or by transfixing them, in order to procure their obliteration, continues to be practised with advantage, and, if it may be allowed to draw the conclusion from the absence of reports to the contrary, with general success; for although we have a narrative of some cases by Mr. Liston which would be sufficient to justify caution, it in no degree would deter us from the practice. Mr. Mayo has also stated that the application of caustic potash to the surface will cause obliteration of the vessels, by producing subacute inflammation within them, and consequent coagulation of the blood.*

Circocele has been treated also by transfixing the enlarged veins with threads; and in a case lately treated in this way by myself the cure promises to be perfect, and was attended with little inconvenience. With reference to circocele, I cannot omit to mention the operation proposed by a surgeon whose name will be received with unfeigned respect by all present; whose mind, in the maturity of age, still retains the vigour of youth; and whose heart has never lost the feelings which belong to its best period. You can hardly fail to know that I mean Sir A. Cooper. In very aggravated cases of this disease, he has removed large portions of the relaxed scrotum, with the view of obtaining a permanent and complete support to the enlarged veins; and the success has been equal to any reasonable expectation.†

* *Outlines of Pathology*, p. 433.

† *Guy's Hospital Reports*, No. vi.

Two cases of vascular tumor in a very unusual situation, the uterus, to be hereafter adverted to, have been narrated by Professors Kilian and Carswell. A case of varicose aneurism, caused by the absorption of the coats of the corresponding femoral artery and vein, is described by Mr. Perry,* and is altogether a remarkable, probably unique case.† Our able associate, Mr. Norman, has given an interesting statement of the dissection of an old case of aneurism, in which the external iliac had been tied by himself twenty years before;‡ and in the first number of the *Reports of Guy's Hospital,* is the account of the dissection of a case of femoral aneurism, where the artery was tied by Sir A. Cooper eighteen years previously; as also that of the first case of carotid artery (successfully tied by the same surgeon,) after thirteen years had elapsed; many other interesting cases have been also recorded. One has been related by Renaud, in which an aneurism of the external and common iliac was cured by the continued application of ice during two years.§ Under this head I also feel it my duty to advert to a very highly important work by M. Bizot,‖ founded upon accurate and close observation of facts as revealed by the force of numbers, from which I may very briefly state the following results of his observations on one hundred and fifty-seven dead bodies, viz., that the common iliacs are the arteries liable to be soonest affected with simple spots,

* *Medico-Chirurgical Transactions,* vol. xx.

† Since this was written I have heard of a very similar one.

‡ *Medico-Chirurgical Transactions,* vol xx.

§ *Gazette Medicale,* September, 1837.

‖ *Recherches sur la cœur et la système artériel chez l'homme, par J. Bizot, Genève.*

which he has found as early as the seventh year; while in the brachial artery they do not appear before the forty-eighth. He has seen the posterior tibials ossified at thirty-five; the internal carotids not before sixty-six. Yellow spots, he says, attack the aorta and its immediate branches at an early period, while the most distant have osseous deposits. He confirms the fact that diseases of arteries are remarkably symmetrical. He also states that out of one hundred and fifty-five subjects in which he examined the foramen ovale, it was open in forty-four, but without any symptoms of cardiac disease. His observations on the continual increase of size of the heart during the whole of existence, are also highly important, being opposed to the dicta of many eminent men, but supported by Dr. Clendinning in his very able and elaborate paper;* and it contains many other extremely valuable observations on the laws which govern the development of the circulating system.

Admission of Air into Veins.—Among the morbid phenomena, which only of late have attracted the attention of pathologists, may be mentioned the Admission of Air into the Veins during operations. Several very interesting memoirs relating to it have been communicated from various sources, chiefly French;† and as the subject is one comparatively

* *Medico-Chirurgical Transactions*, vol. xxi.

† Memoir by M. Amussat, and Report by Bouillaud, *Bulletin de l'Academie Royale de Medicine, tome ii.*, No. 12. *Lettre sur l'introduction de l'air dans les veines, par* M. Velpeau, *Gazette Medicale*, February 24th, 1839. Inaugural dissertation by J. R. Cormack. *Warren on Tumors*, p. 259, &c. An excellent article in the *British and Foreign Quarterly* for October, 1838; and in the *Medico-Chirurgical Journal* for July, 1838.

new, I may perhaps be justified in mentioning the principal facts which appear to have been ascertained either from observation or experiment.

It appears, then, from experiments made for the purpose, that air introduced in large quantities, proves destructive to life in a space of time varying from three minutes to several days; and after death the right cavities of the heart are found filled with it. Air also is mingled with the blood in the vessels of the brain, as well as of other parts, and death is imputed to a threefold cause; namely, mechanical impediment created to the passage of the blood through the heart, through the lungs, and the effect of the air on the brain. If the proportion of air be not large, the animal may recover. In the human subject, several cases of this accident have occurred during operations, and the mechanism of its introduction is stated to be as follows:—The current of blood in veins near the heart is affected by respiration, as is well known, and constitutes what is called the venous pulse, which however hardly extends beyond the lower third of the internal and external jugular vein, and to a corresponding distance in other veins contiguous to the heart. When such veins have been opened either accidentally or necessarily, the air has sometimes rushed in with a whistling or gurgling noise, and death has usually soon followed, often immediately. There can be no doubt that many ill understood fatal cases of operation may be explained from a knowledge of this fact. Being well aware of the possibility of such an accident, surgeons will guard against it as much as possible, especially in the valuable operation

of opening the external jugular, during which continual pressure beneath the orifice ought never to be omitted. On the conduct to be pursued with reference to this point in the removal of tumors, Dr. Warren gives several judicious directions.

The pathology of tumors has been advanced by Dr. Warren in America;* and Mr. Hawkins in this country;† also by Dr. Macfarlane;‡ but in the present report so many other matters present themselves, that I shall not introduce a subject which demands such extended consideration, and which I doubt not will on a future occasion receive full justice.

Fractures.—If we regard the frequency of these injuries, the suffering and inconvenience they occasion, and often the permanent disabling of the member affected, it must be confessed that there are few accidents which more deservedly engage our attention. Late years have abounded in new plans for their treatment, many of them great improvements on the old ones, and to some of these I feel it right to advert.

Various excellent mechanical contrivances for managing fractures, especially of the thigh, have been introduced in this country by Earle, Amesbury, Mackintyre, Hancock, Greenhow, and others, the object aimed at, being of course to maintain

* *Surgical Observations on Tumors,* by J. C. Warren, M.D., Boston.

† *Medico-Chirurgical Transactions,* vol. xx.; and Lectures in the *Medical Gazette.*

‡ *Medical Gazette,* June 2nd, 1838.

the correct position and proper length of the limb, and there can be little doubt that this end is better attained by these than by other methods.*

M. Josse, of Amiens,† has proposed a plan of treating these fractures by permanent extension, and in few words it may be stated to consist in fixing the foot to the bottom of the bed, which is raised, so that the weight of the head and trunk being depending, produce a constant extension along the plane. To this some inconveniences must attach, although they are not much regarded by the proposer. I may perhaps be permitted to say that nearly two years before M. Josse's work was put into my hands, I had adopted the same principle, but carried it into effect in a different, possibly it may be thought a preferable mode, viz., by fixing the superior part of the body to the head of the bed, which is raised, and making extension on the limb by means of a weight fixed to the leg, properly guarded, and acting over a pulley, assisted also by a very simple apparatus, which it would occupy too much time to describe here, but of which I beg to offer a representation to your notice.‡ The result of this plan during several years has been very satisfactory, inasmuch as the limbs have been restored to a very perfect condition, and the patients have complained very little of the treatment when

* An apparatus should be mentioned which has been invented by Mr. Bulley, of Reading, for the treatment of compound fractures of the leg, on the principle of raising that portion of the limb on a horizontal line above the level of the body, an object I conceive of great importance when combined with an immoveable position.—*Medical Gazette*, May 25th, 1839.

† *Melanges de Chirurgie Pratique*, Paris, 1830, p. 279.

‡ *Vide* plates at the end of the article.

due care has been taken. The principal advantage of this mode of treatment appears to be this,—that for any apparatus to succeed which has not the power of accommodating itself, (and such are those commonly employed,) it is necessary, not only that it should be perfect in its nature, but that the ligatures by which it is applied should not yield; but this must of course vary according to the state of the tackle, and the skill and attention with which it is adjusted, as well as the patience of the person treated, whereas, in the plan proposed, the apparatus will accommodate itself, and if from any movement the limb should be for a moment shortened, (which however is especially guarded against,) the steady but gentle force in operation will restore it to its proper length.

Since the foregoing passages were read at the meeting, in a communication I had the pleasure of having with Mr. Syme, at Edinburgh, he informed me that Hildanus had used the weights and pulley, and on reference I found that this was the case, so that neither M. Josse nor myself are entitled to the credit of this mode of treatment, if really preferable to others; but at all events, in recommending it once more to public attention, there is the satisfaction of knowing that this may be done on higher authority than we can pretend to boast of, and if the "*multa renascentur*" applies against our claims to originality in this respect, we may, nevertheless, have a right to hope that this old plan may be revived with advantage, as well as that of the immoveable apparatus, (to be presently mentioned,) the offspring of still greater antiquity.

But although the method itself be not new, perhaps it may still be thought that the manner in which it is adapted to the accident is more suitable than that used by Hildanus* or (in a more imperfect sort) by Paré. It is not improbable that the rather coarse mode in which the former great surgeon employed it, may have proved the cause of its entire and long abandonment Fixing the upper part of the body by what he calls a remora, he simply applied a vinculum with cords and weights attached, round the thigh just above the knees, which must have occasioned an almost entire stoppage of the circulation if any weight were used adequate to the occasion, and no means of supporting the vessels below by a bandage seem to have been used. With regard also to the principles on which the superiority, if any, of the proposed plan to mere fixed extension depends, and which has not, as far as I am aware, been mooted by any one, the observations here offered may perhaps be deserving of some attention.

Another and very different plan recommended of late, as is well known, has been that of abandoning splints altogether.† I cannot offer an opinion on it, having little experience of the practice, but merely feel myself called upon to state that in those cases which have occurred to my observation, in which, from necessity, extension and splints have not been applied, the result has been invariably disadvantageous, excepting in young children and in spent limbs.

* *Hildani Opera*, p. 47.

† Burke on the Treatment of Fractures of the Lower Extremities without the aid of Splints, 1837 ; Radley, *Lancet.*

It is now pretty generally known that a most important improvement has been very recently introduced into this country, by the adoption of a plan for many years employed in France, Belgium, and Germany, namely, an apparatus called the *immoveable,* and first adopted in the former country by the illustrious Larrey;* greatly improved, however, by Dieffenbach,† Seutin of Brussels, Velpeau,‡ and others. It may be doubted whether this will be found to answer for the thigh, especially high up; but in other parts, especially in the legs, there can be no question of its superior advantages in many cases.

Perhaps there are few additions to modern surgery of more importance than this, and it seems remarkable, not only that it should neither have suggested itself generally to the surgeons of civilized countries, nor have been borrowed by them from the more barbarous nations who have been long in the habit of employing it, but that we should even have absolutely neglected the practice of our own predecessors; for such appears to be the fact, as shown by the following quotation from the works of old Gale, which I borrow from an anonymous contributor to the *Lancet,* to the following purport:— "Howe the broken bones united and joined together; may be kept and remaine in the same figure, so that they may come to their former estate." This Gale directs to be accomplished by large compresses and rollers, united with white of eggs:§ *and this was published nearly four centuries ago!*

* *Mémoires de Chirurgie Militaire.*

† As stated by Muttray "*de Cruribus fractis gypso liguefacto curandis,*" 1831.

‡ In a Memoir presented to the Academy of Sciences, September, 1837, *et alibi.*

§ *Gale's Chirurgerie,* chap. iii., 1563. *Lancet,* January 19th, 1839.

In looking over works in order to ascertain the improvements of modern times, it is quite impossible to help observing how many have been long ago suggested by others, and have since been forgotten or neglected, and that in our profession, not less than when Horace wrote, men are continually making improvements, which perish with them, because not suitably recorded. Many are not communicated at all, and others, although registered, it may be, in the pages of a periodical work, are slightly noticed at the time perhaps, because not recommended by an established name, and are soon allowed to slumber in oblivion.* When some method shall be devised of selecting with competent knowledge and just impartiality the additions which are continually made in this and foreign countries to the amount of our really useful information; when such information is digested and arranged, so that any one studious in a particular branch may easily learn what is best worthy of being known in it, there will be an immense facility given to the real progress of science, and men engaged in advancing it will, on the one hand, be spared a multiplicity of unnecessary research, and, on the other, escape an often undeserved suspicion of wilful plagiarism.

The occasional want of bony union in fractures still engages the attention of the profession, and an interesting case has been communicated by Mr. Bransby Cooper, in which, after seton, immoveable

* A communication on this subject by Mr. Wigram, of Brighton, in which he states that he has for a great number of years employed *papier machée* for the same purpose, particularly prompted me to make these remarks.

bandage, and other means had been tried in vain, at the expiration of about ten months, mercury was resorted to by the recommendation of Dr. Colles, of Dublin, (who accidentally saw the patient,) and with complete success.* It was carried to ptyalism. In this instance it would, perhaps, be difficult to suppose that a new joint had been completely developed, but rather that the case was of a nature presently to be adverted to; at all events, we must hope for further information on this mode of treatment. I ought, perhaps, while engaged on this subject, to mention that having failed not long ago in obtaining union of the bones of the upper arm by excision of their ends, in a case where a seton could not have been passed, I had recourse to an external apparatus to give stability to the limb, which appeared to answer the purpose so well, that I should feel very reluctant to undertake a severe operation again for this defect, unless on further trial the apparatus was not found to succeed.

The contingency to which I have just alluded as not unfrequent in cases of fracture, is an excess of inflammatory action of the callus, which may ensue several weeks after the accident, occasionally causing softening and absorption of the deposited bony matter, and ultimately the disunion of the ends. Some mention has lately been made of this by M. Guyot,† and it is quite remarkable that it has

* *Guy's Hospital Reports*, No. v. I should here mention the series of papers communicated by Mr. B. Cooper, in the *Reports of Guy's Hospital*, on the process of reparation in fractures, with the respect they deserve; but it is evident that the absolutely practical matter which must here be mentioned is so very extensive, that it would be vain to go into any lengthened detail on this subject.

† *Archives Général de Médécine*, February, 1836.

not attracted more strongly the notice of the profession. When understood, the treatment is simple and efficient, namely, by leeches and evaporating lotions to the part, and by blisters in the neighbourhood. The time at which deformed union of fractures may be corrected was not long since stated by Œsterten to be as late as the end of the fifth week, but in some rare instances the period of firm union has been unusually deferred (not improbably from the species of inflammatory action in the callus just alluded to), and has allowed of extension so late as the sixth month, of which Mr. Syme has lately published a case.*

Many instances of fracture and extensive displacement of the vertebral column have been recorded of late years in which the patients have survived, and but recently we have had three very interesting communications on this subject; one by Mr. Phillips,† in which he describes a fracture of the anterior part of the body of the atlas, which was displaced and lodged in front of and united to the anterior part of the axis, and the person lived forty-seven weeks afterwards, with little reason to suspect the nature of the injury till dissection proved it; a case which remarkably shows to what an extent even a sudden encroachment on the summit of the spinal canal may be borne with impunity.

The second is from the pen of Sir B. Brodie,‡ and, like all his other communications, is instructive in a high degree; it embraces the subject of injuries of the spine generally, but with reference to the

* *Edinburgh Journal*, October 1838.

† *Medico-Chirurgical Transactions*, vol. xx.

‡ *Medico-Chirurgical Transactions*, vol. xx.

present point, he mentions two cases of fracture of the vertebral column in which reduction was attempted, and in the first effected with remarkable advantage; in the second also with some degree of success.

The third is a case communicated by Mr. Stephen Stanley,* and affords another remarkable proof of the extent to which the capacity of the spinal canal may be reduced without materially affecting the functions of life. The patient died from a dislocation of the fifth cervical vertebra from the sixth without any fracture, but when the body was examined, it was found that from former disease in this region, the vertebræ had been anchylosed and so much disturbed from their natural position, that at the occipital foramen "there was scarce room to admit the point of the little finger."†

The practical question to be determined is, whether it be right in these cases to proceed upon the same principle of treatment as in others of fractured or luxated bones, and it is well known that opposite opinions on this point are entertained. One objection, however, to the attempt at reduction appears to be ill grounded, viz., the danger to the chord from traction, for those who consider to what an extent the optic nerve may be drawn out without destroying its functions, or the nerves of the limbs in the more analogous case of dislocations, will

* *Lancet*, February 23rd, 1839.

† Mr. S. Stanley, who appears to have examined the information existing on this subject with much diligence, has, among other cases on record, quoted one from Ehrlich in which there could be little doubt that there was a dislocation of the atlas from the occiput, but in which reduction was effected, and the patient's life saved.

not hastily conclude that if the spinal chord were stretched in a slight degree, injury would result from it. Sir B. Brodie recommends the attempt at reduction, excepting where the cervical vertebræ are concerned, and it may be allowable to state, that of several cases which have come under my own care, three derived the most important benefit from it, at least so it appeared to me; of two I communicated the particulars, through my friend Mr. Stanley, to the Medico-Chirurgical Society five years ago, and another has since occurred; they survived, and are, as I believe, now alive.*

Luxations.—As the mode of proceeding in reducing dislocations is pretty well settled, some of the most important points in the treatment of these cases remaining to be decided are, the period after the injury when the reduction may be attempted with sufficient probability of success, the joints in which the trial may be expedient from the degree of imperfection produced, and the amount of force which may be safely applied. As the latter must be altogether relative, depending upon the age and strength of the patient, it may be very difficult to determine it; but with respect to the former, we have a very important statement offered to us as the result of the experience of Mr. Lawrence,† in which, while he offers good reasons for believing that forcible extension of old luxations, although it may not effect the reduction,

* The operation of cutting down upon and elevating a portion of the vertebral column has been performed with success by Mr. Edwards of Caerphilly, and it is to be wished that the details of this case were more generally known.—*British and Foreign Quarterly*, No. xi., p. 162.

† Clinical Lecture reported in *Medical Gazette*, November 17, 1838.

will often greatly contribute to increase the mobility and consequent usefulness of the limb, he at the same time impresses the necessity of attending to the fact, that serious injury does accrue more frequently than is commonly supposed from too violent attempts to replace them.

Anchylosis.—Our brethren in America continue to exhibit great zeal in advancing the cause of science, and in operative surgery especially have always been sagacious, original, and enterprising. Dr. Barton,* of Philadelphia, has related two very interesting cases in which he has relieved the imperfection arising from anchylosis of the lower extremity; in one, where the hip joint had been destroyed, the neck of the thigh bone was sawed through and converted into an artificial joint; in the other, where the knee was fixed, the same bone was divided above it. In both, great, in the latter, remarkable advantage was derived from the proceeding. The results of the operation of sawing off the ends of bones in ununited fractures, and of excision in cases of diseased joints, may warrant the belief that from the operation itself no very serious danger is likely to arise.

Contractions.—Allied to these imperfections are the contractions induced by changes in the fibrous or cellulo-cutaneous tissues. With respect to the latter, the operation proposed by my late friend, Mr. Earle, (not perhaps so generally practised as it ought to be,) is, I may safely affirm, completely

* *American Journal of Medical Sciences*, February, 1838.

successful in all cases, without exception, arising from burn, when assisted by an *adequate* apparatus, and treated with *due* care. The same principle has been extended to contractions of the cellulo-cutaneous tissue arising from other causes; and although it is now many years since division of this and the palmar aponeurosis was advocated by Dupuytren, it is only of late that it has been extensively adopted. When, however, the degenerated tissue is situated in parts like the palm of the hand, from which it cannot be dissected up, it will probably be found that the operation will often fail; the ligaments of the neighbouring joints, too, are apt to get so contracted as to defeat the success of the operation. Froriep* employs occasionally the same mode of proceeding in contractions of the fibrous tissue when consequent on disease of the larger joints,† or occasioned by fevers, and his observations are highly important. The operation for the relief of club-foot, which is somewhat analogous to these, is obtaining such general approbation, that it is quite needless for me to occupy your time with any observation upon it, my object being rather to bring under your consideration points of practice which are either altogether

* *Chirurgishe Kupfertafeln, zum Gebrauch für practische Chirurgen*, 1836. *British and Foreign Quarterly*, July, 1837.

† In the *Lancet* for May 11th of the present year, is a report of a discussion at the Medico-Chirurgical Society on this subject, in which it appears that Sir B. Brodie and Mr. Phillips have practised this operation with advantage in this country, as well as Krauss, Stromeyer, &c., on the Continent. Just at the time when this address was read, an important communication from Mr. Phillips on the subject appeared in the *Medical Gazette*, July, 20th.

of recent introduction, or have been so lately recommended as not hitherto to have obtained general notice.

Excision of the Joints, although an operation now of some antiquity, it is but justice to observe, originated, at all events as far as England is concerned, with a celebrated surgeon of this great city.* It has of late years been far more frequently practised than formerly, and in many instances with very great success.† It would have been to neglect an opportunity which, on the contrary, I eagerly embrace, had I omitted all mention of such a circumstance when addressing an audience, many of whom must be justly proud of claiming Mr. Park as a fellow-citizen: together with Alanson, he will be always accounted amongst the distinguished men who have really improved surgical science; and if I do not now mention other names of high reputation, it is because, fortunately for the world, death by depriving it of their services has not given us the privilege of declaring the full extent of their merits, and it were better perhaps in their own presence to be silent. Long may it be before such an event may occur. The practice, which first sprung from this place, has been extended, and by many bold operations large portions of diseased bones have been cut away from other

* Liverpool.

† Mr. Syme, of Edinburgh, whose practice in this department has been very extensive, appears to have been remarkably successful in cases of diseased elbow joint; and I ought to mention a valuable memoir in the second number of *Guy's Hospital Reports*, by Mr. Blackburn, on the same subject.

parts of the body. Thus, Dr. Warren, of Boston,* has in two instances successfully removed a considerable part of the ribs; in the first case, of the sixth and seventh; in the other, of the ninth. He has also, as well as his countryman, Dr. Mott, removed the clavicle for a tumor growing on it; and a similar operation has likewise been performed with success by Mr. Travers.† The removal of the whole of the lower jaw has been performed in this country by Mr. Perry,‡ and the individual not only survived the operation, but retained in a greater degree than could have been anticipated, the function of speech, and the power of taking food.

In the twentieth volume of the *Transactions of the Royal Medico-Chirurgical Society*, is also a memoir from Mr. Liston, which will be perused with great interest. It not only contains a graphic though brief sketch of the best mode of performing the operation for the removal of portions of the upper jaw, which has been so much facilitated by the forceps he has himself brought into use, but has the higher aim of determining in what cases this formidable operation may be proper, and in what it might only tend to compromise the life of the patient, as well as the reputation of the operator, and through him the character of the profession by

* *Boston Medical and Surgical Journal*, May 3, 1837.

† *Medico-Chirurgical Transactions*, vol. xxi.: this bold and original surgeon cites the two preceding cases, and quotes another performed by Mohring. To this may be added an operation performed by Mr. Syme, by which the glenoid cavity of the scapula and the coracoid and acromion processes, as well as the os brachii were removed, together with a large tumor of the shoulder.—*Edinburgh Journal*, October, 1836.

‡ *Medico-Chirurgical Transactions*, vol. xxi.

a vain attempt at relief. Mr. Liston gives six cases, the last unsuccessful. Professor Dieffenbach* also has published an account of fifteen cases in which portions more or less large were removed with success; twelve of these were for tumors of a simple nature.

Amputation.—There are few points in surgery which are capable of receiving more complete elucidation from statistical information than the subject of Amputation, and among the various matters which it has been necessary for me to consider, there is none from which information so contrary to all expectation has proceeded as from this.

Mr. Guthrie† long since published some short tables which exhibited a portion of the results which were afforded by the most extensive and protracted war in which we have been for many years engaged; but from a circumstance to which perhaps he did not advert with his usual keenness, or from a defect in the army returns, no distinction was made between amputation of the thigh and leg, and therefore the ratio of mortality in each was left unascertained. Mr. Alcock‡ has lately given the result of the recent warfare in Spain, and in his tables this distinction is made, and perhaps there are few who would expect to find such an enormous mortality as follows primary amputations of the thigh. It is probable that circumstances over which the surgeons of that army had no control might have increased the ratio of loss beyond the usual

* *Hamburg Zeitschrift,* February, 1838.
† On gunshot wounds.
‡ *Medical Notes of the Army in Spain.*

average, but the facts I have myself observed, rather lead me to a contrary opinion.

Mr. Phillips has published in the *Medical Gazette*, of November 14, 1837, a paper which he read to the Medico-Chirurgical Society, containing the results of six hundred and forty cases occurring within four years, and including amputations of all kinds, performed also in four different countries, namely, England, France, Germany, and America, and including cases in private as well as hospital practice; of these not less than one hundred and fifty, or twenty-three per cent died,—an extent of mortality which far exceeds that from lithotomy, and for which many who hear me are not, I am sure, prepared; and large indeed it would be found, as regards the thigh cases, if these were distinguished from the rest. It is well urged, however, by Mr. Phillips, that this operation, as contrasted with others, is often performed under circumstances admitting of no delay, choice, or preparation. From my own observation I should be disposed to say that this ratio considerably exceeds that which has been afforded in the city in which I reside, and although I do not possess the means of making completely accurate returns, yet, as I have some memoranda of considerably more than two hundred cases operated on by my colleagues in the hospital or myself, I might perhaps be enabled to lay before you some facts connected with this subject not altogether devoid of interest, but at this moment it is out of my power to arrange them, and the details would be inconsistent with such a subject as this address. I shall, therefore, pass on to a point which, as freshly mooted by Mr. Alcock, I conceive is worthy of your attention.

Bouchard I believe, many years ago, was of opinion that the division of the period for amputation after accidents into merely two, viz , primary and secondary, was insufficient, and that it would be wise to allow, under certain pressing circumstances, an intermediate period ; this is now strongly advocated by Mr. Alcock, as it was long since by Mr. Guthrie,* and, I may perhaps be permitted to say, by myself also.†

Another fact which Mr. Alcock has advanced, appears of importance in forming any calculation as to the comparative results of primary and secondary amputations, namely, that the mere circumstance of survival to bear a secondary amputation, affords a strong presumption in favour of the goodness of the constitutions of those persons who have been so fortunate as to escape from the immediate consequences of the accident, though that was sufficiently severe to render the loss of the limb necessary at last.

I shall not enter into any discussion as to the views entertained by Mr. Phillips on the propriety of uniting stumps immediately, or otherwise, on the grounds he proposes, but proceed to mention another table for which we are indebted to M. Gendrin.‡ This refers to sixty cases of amputation performed on adults exclusively, and the most important conclusion he draws from them is one strongly supporting Mr. Hunter's opinion, that the chances of success are greater in persons debilitated from

* Lecture published in *London Medical and Surgical Journal*, February, 1832.

† *Observations on Inflammation*, p. 221, second edition.

‡ *Archives Génerales de Médécine, Juillet*, 1835.

disease than in others, a conclusion which at first sight would appear well founded, but if it be considered that in most other cases we commonly have also to estimate the additional shock of the accident which demands the operation, it will at once, I think, appear that no fair comparison can be drawn between the two classes.*

I shall for the present conclude this subject by mentioning a variation in the mode of operating on the thigh, recommended by the authority of our illustrious associate, Sir C. Bell.† It is that of raising the limb to a right angle before the bone is sawed; by this, the posterior muscles of the limb, often cut too short, are saved in greater quantity. The trifling delay which this mode must necessarily occasion, would be amply compensated by an improvement in the quality of the stump; it is perhaps more especially applicable to cases where the limb has been contracted from diseased joints.

Eye.—Diseases of the Eye have during this century attracted a large share of attention, and the practice in this department has consequently been greatly advanced; still improved modes continue to be suggested, some of which it is my duty to mention, though it will be in a very cursory manner.

One of the most baffling and destructive diseases which affect this organ, is purulent ophthalmia.

* We are indebted to Dr. Norris, of the Philadelphia Hospital, for a very complete table of fifty-five cases, but whether this may have afforded in part the data from which Mr. Phillips formed the one I have alluded to, I know not.—*American Journal of the Medical Sciences*, August, 1838.

† *Institutes of Surgery*, p. 326.

The important fact has been stated, upon high authority, that this is a form of inflammation (and there are many,) little amenable to bleeding and the antiphlogistic treatment, but, on the contrary, aggravated by it. Local measures, however, have been recently proposed, which, though severe, are deserving attention, from the character of the surgeons who recommend them. In this country, Mr. Tyrrell,* in order to relieve the strangulating chemosis which exists, advises the making numerous incisions in the interstices of the tendons of the recti radiating to the margin of the cornea ; by these the vessels and the cellular texture are freely relieved of their accumulated contents, without division of the large trunks, and thereby cutting off the supply of blood to the cornea in a degree at all proportionate to that produced by a concentric division ; and thus the risk of increasing the tendency of the cornea to slough is avoided. I am aware that doubts have been expressed† as to the correctness of the opinions derived from the vascular supply of the cornea, on which the peculiar advantage of this mode of treatment has been supposed to depend ; but should this be so, it does not follow that in practice it may be found less valuable.

M. Sanson,‡ without regard to these vessels, actually removes the conjunctiva scleroticæ, and also destroys, as far may be, or at least changes the condition of, the surface of that which lines the lids, by

* *Medico-Chirurgical Transactions*, vol. xxi.

† Wharton Jones, *Medical Gazette*, January 19th, 1839.

‡ *De l'Emploi de l'Excision, &c., dans l'Opthalmies Blenorrhagiques, par J. T. Julliard*, Paris, 1835.

the liberal use of argentum nitratum. The results of this practice also are stated to have been highly beneficial.

M. Velpeau* has recommended the practice of applying blisters over the lids in deep-seated ophthalmia, and upon rational grounds, since the parts inflamed have little direct vascular connexion with the lids; at all events, a plan introduced by such authority is entitled to consideration. Dr. Fricke, of Hamburgh,† also advises for superficial ophthalmiæ of various kinds, the use of calomel, finely levigated and washed in alcohol, and then applied by means of a camel-hair pencil to the conjunctiva.

Mr. Mackenzie‡ has impressed more strongly on the attention of the profession the remarkable fact, that if one eye suffers a destructive lesion, whether from external violence or from spontaneous disease, the other eye is prone to fall into the *same* state, whether it be iritis or staphyloma, or any other form.§ Independently of the importance of this circumstance itself, with reference to general pathology, it further possesses great interest, as it is very difficult to be accounted for, excepting by the direct influence of the nerves in producing inflammation.

An additional and very striking proof of the manner in which the abstract sciences may be usefully applied to medicine, is afforded by M. Sanson's mode

* *Journal des Connoissances Medico-Chirurgicales*, September, 1836. *British and Foreign Quarterly*, No. vi.

† *Medical Gazette*, vol. xxii., p. 397.

‡ *Medical Gazette*, October 6, 1838.

§ This subject demands further inquiry. The remarkable proneness of teeth to decay in pairs, may be an analogous phenomenon; and perhaps there are others.

of distinguishing cataract from glaucoma and amaurosis.* If a candle be held before a healthy eye, three distinct images of it will be visible by reflexion; the middle inverted, the two others upright. The middle will correspond with the lens, being produced by the reflexion of the posterior capsule; and in amaurosis and glaucoma this will obtain as well as in the healthy eye; not so in cataract, on account of the opacity of the lens. The accuracy of this observation is confirmed by Mr. Mackenzie.†

I ought not to omit the mention of a very ingenious instrument, contrived by our indefatigable associate Mr. Middlemore,‡ for the extraction of various forms of capsular cataract. The operation of Wenzel and Gibson consisted in opening the cornea, and removing the opaque part with forceps. Mr. Middlemore observes that a protracted operation and the frequent introduction of instruments through the cornea, may give rise to much injury. The instrument he describes as calculated to avoid it, is a spear-pointed needle, enclosed within the blades of a fine forceps, and passed through the sclerotica instead of the cornea. He has tried it on an animal with success, but I am not aware that he has yet operated with it on human subjects.§

Ear.—Diseases of the Ear are perhaps as little discriminated in this country at the present moment, as those of the eye were at the beginning of the

* *Archives Générale de Médecine*, December, 1837.

† *Medical Gazette*, April 14th, 1838.

‡ The author of a very able and elaborate systematic work on Diseases of the Eye, published in 1835.

§ *Medical Gazette*, April 7th and 21st, 1838.

century. There is a fashion in all things, and the current has swept by the important subject I have alluded to, and taken another direction; nevertheless, if we regard the extent of the infirmity, it is one which surely claims our especial regard. On the Continent due attention has not been wanting; and the recent establishment of an infirmary for these diseases in London, will in all probability, at no distant period, remove this reproach as regards ourselves; at all events, it is evident from the work of Mr. Pilcher and other memoirs, that the profession is alive to the importance of this subject. We have a recent work of great merit on these diseases, freshly translated into our own language by Mr. Bennett;* and from it we may learn that, by sufficient attention, the diagnosis of these diseases may be rendered more accurate than could have been supposed, and by competent skill their effects greatly relieved. The recommendation of the injection of the vapour of acetous æther into the cavity of the tympanum through the eustachian tube, by means of an apparatus adapted to the purpose, in cases of atonic deafness, may be especially mentioned; and Mr. Kramer is a strong advocate for the practice of Itard, Delean, and others, little known as yet in this country, of clearing obstructions of the eustachian tube by the introduction of sounds and applying remedies to the middle ear through this canal.

Tetanus.—It is necessary that I should mention the valuable and comprehensive work on Tetanus

* *Kramer on Diseases of the Ear.*

by Mr. T. B. Curling,* which contains also much important statistical information with respect to this still very obscure form of disease; but I cannot enter upon the subject as it deserves.

Bronchotomy continues to be practised with advantage in laryngitis and œdema of the glottis.† An important point to determine, is not only in what diseases, but in what stage of them, the operation may be performed with reasonable hope of success. It appears to be the judgment of Mr. Lawrence, Mr. Porter, Mr. Liston, and other high authorities, that when asphyxia has taken place, it is generally too late.

A remarkable case appears in the twentieth volume of the *Medico-Chirurgical Transactions*, where the operation was performed by Mr. Andrews of Salisbury, at the instance of Mr. Sampson, in consequence of coma ensuing from intoxication. It was employed without artificial respiration, and the person recovered. The occurrence of coma is, with great probability, attributed by Mr. Sampson to the asphyxia occasioned by the want of proper action of the muscles of the glottis, and is obviated by the operation alluded to. It is singular that the same volume contains a case communicated by Mr. Smith, of the Madras army,‡ in which the effects of the coma induced by opium were averted by artificial respiration through the nostrils. Connected with this subject, I may also mention the very ingenious

* *Treatise on Tetanus* The Jacksonian Prize Essay for 1834.

† Mr. Liston's testimony is very strong, p. 374, *Operative Surgery.*

‡ Particulars of a case in which the patient was saved from the destructive influence of opium, &c.

apparatus contrived by Mr. Read to maintain artificial respiration, which, in addition to the power it possesses of inflating the lungs, is extremely well adapted to the purpose of previously exhausting them of the foul air they contain.

Among the evils which distress mankind, there are some which, although lightly regarded by the profession, may nevertheless be accounted fully deserving of their notice. I now allude to Corns, Bunions, &c. A large portion of the community are affected by them. They materially impair the functions of the limbs, deprive us of exercise, fetter our exertions, and continually diminish our comfort. It would almost appear that we had adopted with regard to them the maxim of another learned profession—*De minimis non curat;* but if the wisdom of such conduct in the law is doubtful, no valid excuse can be offered for it in medicine; and it is to be hoped, that since some of the highest names in the profession may now be cited in proof of their estimation of the importance of these matters, the inattention hitherto manifested by others will cease. I particularly allude now to Sir B. Brodie and Mr. Key.*

Necrosis.—A disease so frequent, so tedious, so productive of distress, mutilation, and not unfrequently death, continues to attract the attention it deserves; and with reference to treatment, a mode has been proposed by one of our most able prac-

* Sir B. Brodie's Lecture in *Medical Gazette*, January 19th, 1836, and Mr. Key in *Guy's Hospital Reports*, No. 3.

tical surgeons, which promises to be a very important improvement. The difficulty of penetrating the hardened case of new bone when long formed, is too well known to require any comment; and it not unfrequently happens that any attempt to reach the sequestrum is either rendered abortive thereby, or occasions such a degree of disturbance to the whole shaft, as to produce more harm than good. Mr. Guthrie,* to whom I allude, has availed himself of the peculiar properties of a remedial agent recently introduced (to which I shall again have occasion to refer)—the chloride of zinc, which, attacking the animal tissue of the bone, destroys it, and thus causes the earthy matter to soften and become detached. The sequestrum is by this means exposed with little pain or disturbance of the part, and may be dealt with according to circumstances. To the success of this plan I can myself most willingly testify.

There are few maladies more painfully distressing than Stricture of the Œsophagus. Any mode of treatment which offers a prospect of advantage is deserving of trial, and I feel bound to mention that Sir C. Bell† has recommended in these cases the introduction of a kind of probang with a conical piece of sponge moistened by a solution of argentum nitratum.

Teeth.—The researches of several foreign physiologists, especially Retzius, Müller, and Pürkinje,

* *Medico-Chirurgical Review*, April, 1838.

† *Institutes of Surgery.*

and of Professor Owen* and Mr. Tombs† in this country, proving the existence of a tubular arrangement in the teeth, extending from the centre to the circumference, and subservient to the distribution of nutritive juices in the interior of these important organs, are highly interesting. They vindicate the accuracy of some of the most celebrated anatomists of ages long past, especially Leuenhoek; and in a practical point of view they are important, as is made evident by Professor Owen, for he shows that these tubes are enabled to perform a reparative process, which takes place whenever the operation of excising and plugging carious teeth has been successfully performed.‡ The knowledge of this fact may perhaps lead eventually to some method of treatment by which the natural powers may be assisted in throwing out this material, and thus resisting the progress of decay in this as well as in other parts of the animal frame. While on the subject, it may perhaps be allowable to offer to the consideration of those best enabled to judge, the suggestion that the peculiar properties of the chloride of zinc might be rendered available for the purpose of destroying the excessively sensible surface of carious teeth less painfully than instruments, and the subsequent operations might be rendered bearable. I imagine this would act on the terminations of nerves; but in so speaking I

* *Proceedings of the British Association*, 1838.

† *Proceedings of the Royal Society*, 1837–8; and *Medical Gazette*, February 16th, 1838–9.

‡ This has been objected to, I am aware, by Mr. Nasmyth, but there are many circumstances which tend to prove the correctness of the opinion of Professor Owen.

am aware that I am assuming an unproved fact. It is not, however, too much to expect that the discovery of the mode of nervous communication will follow that of the nutrient system of the teeth, and we have the powerful *argumentum ex absurdo* for their existence, derived from the acute sensation of the surface of diseased teeth, which can in no way be explained by the communication of an impression through a mass devoid of nervous substance or power; for it is well known that the degree of sensation, in accordance with that observed in the rest of the frame, is much greater in the ulcerated surface than below, and diminishes as the operator proceeds, which variation in degree can hardly be explained on any other terms than those proposed.

Syphilis.—I have already mentioned a Seance of the Academy at Paris, to discuss the comparative merits of lithotomy and lithotrity; a similar Seance has been held at Nantes* to determine, as far as may be, the facts best ascertained as to the nature and treatment of Syphilis; but I chiefly allude to this matter because it is impossible for any one called upon to consider and report the progress of the profession in various countries, not to feel and to notice the remarkable difference between the relative condition and conduct of the medical profession here and elsewhere, under the same circumstances. Nantes, it is true, is the capital of an important province, but a town of less size than Liverpool, or Manchester, or Birmingham, or

* *Procès Verbaux des Séances ténues par les Médécins de Nantes, &c.*—Nantes, 1835.

Bristol, or others that might be mentioned in Great Britain, yet we find its practitioners meeting according to accustomed usage, (hitherto confined in England to the metropolis,) to discuss the most important points, and publishing the results of their discussion with the certainty that they have weight, and will be read with interest and attention. The Association I have the honour to address, it may be hoped, will foster a similar spirit and similar confidence in the great towns of Britain; and I must take this opportunity of stating that if we regard the means of practical information possessed by the kingdom at large, as compared with that of the capital, it must be allowed that they are very great, and even setting aside the general mass of population, and looking only to the actual number of patients treated in the principal provincial hospitals of which we have returns, these may be estimated at more than two thousand on a daily average,* while those of the metropolis probably do not exceed three. It is not the means then, nor, it may be added, the ability that is wanting. Accident has thrown many of our greatest names on the metropolis early in life, who, if they had remained in the country, would have enjoyed the same talents, but exercised them with far different results; these results, however, are not necessarily the consequence of their position. Small cities have produced men as eminent in acquired knowledge as the largest, and we may turn to Leyden and Geneva, Göttingen,

* Statistics of Provincial Hospitals, in the *British Medical Almanac* for 1836. They were one thousand eight hundred and ninety-six in 1828–9, and the number has been undoubtedly increased in those, and new hospitals have been added.

and Montpelier, Heidelberg and Padua, for illustrations of this point. In this very country, Edinburgh, when its population was far below that of the city in which I have the honour to address you, produced some of the first ornaments of the profession, and probably was not excelled by any capital in Europe. Then what are the causes of the difference? I believe they will be found not so much to depend upon the value of the prizes resulting from successful practice (for true science disregards these,) as from two circumstances, viz., the association of the members of the profession for the purpose of advancing knowledge, which always gives distinction to merit, and the practice of teaching others, which has invariably promoted the degree and accuracy of the knowledge of the teacher; and here I cannot but lament, with my distinguished predecessor, Mr. Crosse, that the legislature, by delegating the whole of its power to the members of the profession who reside in the metropolis, have taken the most effectual mode of blighting, instead of encouraging the means of improvement which exist elsewhere. A very few of the large towns are, *mole suâ*, constituting themselves places of education, of which the surrounding districts will be sure to avail themselves, and at no distant period to a far greater extent than at present; but there must be among this assemblage of provincial practitioners many who also feel that a great injustice has been done to many cities and towns of less size, possessing, nevertheless, excellent means of instruction, of which no account worthy of notice is made by our chartered bodies, who have determined, with little evidence or examina-

tion, that unless a school is complete, it is not to be considered at all.* It has, however, and well may be doubted whether the practical knowledge obtained in the one situation may not be equivalent in reality to a large share of that overload of merely preceptive information which it has been considered necessary for all pupils to acquire in the metropolis, and which, with many, must constitute their chief stock of acquirement. That the opinion expressed with respect to the excessive cultivation of this species of information is not altogether without foundation, will perhaps be shown by nothing better than by testimony which cannot well be rejected, I mean that of Sir B. Brodie, from whose lips the following remarkable words have only just proceeded. In the admirable discourse addressed to his own pupils, he thus expresses himself:—"While engaged in attendance on the hospital, always bear in mind that there is no one of your other studies which, as to real importance, can compete with this. They are but the means to an end, and are valuable only because without them you would be unable to learn the symptoms and treatment of diseases in the hospital;" and after noticing that the conduct of students is not commonly in accordance with this opinion, he adds, "perhaps, however, if strict justice

* It is not that I do not fully appreciate the high character of many of the most influential individuals who constitute those bodies, but that I think neither they nor any of their predecessors have ever taken the pains they were bound to do in ascertaining more fully the means of instruction afforded in the provinces, and, what is of equal importance, the honest wishes of parents who, having sons to educate in our profession, would, for many reasons, prefer that the early part of their lives should not be spent far from their homes and parental control.

were done to all concerned, and we were to trace this mistake to its origin, we should find that it belongs, not so much to the medical students themselves, as to those by whom their course of education is regulated, and who, by a false estimate of the importance of lectures, and an unnecessary multiplication of the numbers of them which the students are required to attend, have left an altogether insufficient time for a profitable attendance at the hospital."*

But to return; the Seance of Nantes has not, for it could not, settle the disputed points which regard the disease I have just alluded to; still the facts and opinions stated both there and elsewhere, all tend to confirm the truth of those observations for which we were first indebted to the zeal of our own army surgeons, and which, in a considerable degree, have tended to render our views more correct, and our practice more certain. But to go at all into these matters, would obviously lead me into a long, and, in this place, inappropriate discussion, since nothing absolutely new, as far as I am aware, has been discovered, either as to its nature or treatment. Many treatises on this disease have been published, among which I have particularly to mention those of M. Ricord† and Dr. Colles,‡ also the lectures of Mr. Key and of Dr. Graves, who has given an important communication from Dr. Fricke, of Hamburg, with many interesting remarks of his own.§ As yet, however, we have not ap-

* An Introductory Discourse on the Studies required for the Medical Profession, October 1, 1838.

† *Traité pratique des Maladies Veneriennes.*

‡ *Practical Observations on the Venereal Disease.*

§ Lectures in January, 1839, &c.—*Medical Gazette.*

proached to any exact conclusion with regard to the very essential point of discriminating those cases which ought to be treated with, and those without mercury; and if with mercury, what preparations are particularly suited to particular constitutions or symptoms, for there is no man of experience but must be aware how very remarkably different forms of the same remedy differ in their effects.

On this disease a large number of facts, (to which Dr. Fricke's report extensively adds,) all go to prove that syphilis is curable by the powers of the constitution under a very exact regimen, but to say nothing of the large proportion of cases which never will or can be made to submit to this treatment, even in hospitals, where the evidence is in favour of the non-mercurial treatment of the mass, yet, as the results have been obtained by taking the chances of the whole, if I may so express myself, it does not follow that many might not have been better treated in a different way, and it is this which remains to be determined.*

Glanders.—My learned colleague, Dr. Symonds, by alluding to the subject of Glanders, has rendered it unnecessary for me to say any thing on this subject, but I may be excused perhaps for expressing

* I am not aware whether the circumstances I shall mention have been sufficiently taken into consideration in discussing the nature of this disease, or the effect of mercury upon it; I believe it is a fact, that however various the forms of syphilis may be as seen in the adult, in the infant the character is always the same, and also that mercury will almost invariably cure this form, while without it, it does not get well.

the opinion that the communication of this malady to man, adds to the number of those which other animals, generally the domesticated, can inflict upon him; and when we reflect that for the most part such diseases as hydrophobia and glanders are propagated from want of sufficient attention to the creatures who so greatly serve us, we must allow that it is both just to us and useful to them, since it tends to induce that care for our own sakes, which would otherwise be wanting for theirs. It is not a little remarkable that the converse appears to be not true, and that the poisons of the human race are harmless to other animals, at least there is great reason to suppose so. They will suffer in common with us from a tainted state of the atmosphere, but experiments which have been made, seem to shew that diseases infectious among ourselves are not so to them. M. Bulard has inoculated them most carefully with the matter of plague, but with no results, and they live with impunity in the midst of our most frightful diseases, provided these are not the consequences of an altered state of the atmosphere.

Diseases of the Rectum.—The diseases of the anus have for a considerable period received the attention they deserve. Diseases of the internal rectum have also attracted a greater share of notice, and the various operations required for them have been determined with more precision. We are indebted to Dr. Bushe* and Mr. Syme,† for much useful

* Treatise on the Malformations, Injuries, and Diseases of the Rectum and Anus, &c., by Geo. Bushe, M.D., &c. &c.

† On the Diseases of the Rectum, by James Syme, F.R.S.E., &c. &c.

information on this subject. But there is one important point connected with it, which particularly requires that the experience of the profession should be more extensively ascertained, (perhaps I might venture to add exercised,) namely, stricture of the rectum, because statements diametrically opposite have been expressed. It has been asserted pretty strongly that the views of those who believe that strictures are of common occurrence, and especially that they often are situated above the lower part of the bowel, are, to say the least, visionary. It has been affirmed, in support of these opinions, that the promontory of the sacrum, or a fold of the intestine, have been mistaken for stricture. Now it is scarcely credible that skilful surgeons accustomed to the use of instruments, passing bougies in a proper direction, could possibly fall into the former error; a fold of the bowel, however, no doubt, does frequently obstruct the point of the instrument, but the same thing often happens in the urethra, and any conclusion with respect to the non-existence of frequent strictures in that canal, drawn from the occasional hitching of a bougie in a lacuna, would never be allowed. If we may ever venture to reason from analogy, the frequent occurrence of stricture in other canals,—in the urethra, the œsophagus, the lacrymal or eustachian tubes, nay even, I may be permitted to say, in the arteries themselves, would strongly tend to the conclusion that the alimentary canal is little likely to be exempt, and, as far as my own limited experience goes, it would lead me to believe that it is indeed far from being the case, nor that the lowest portion of the rectum is its only seat.

There are many other important branches of surgery which have attracted attention, and received considerable improvement within the last three years. I deeply regret that it has not been in my power to enter into them, but I feel that I cannot pass over one which is so interwoven with all the rest, that it must ever be a principal object of pathology, whether external or internal; I mean Inflammation: for various reasons, however, I shall avoid occupying any large portion of your time in discussing it, and for this more particularly, that I may not be guilty of the error of indulging in a favourite theme. The period, however, which I am required to report on, has afforded us several memoirs too important to be passed over without notice, whether we regard the endeavours to illustrate the true nature of the phenomena, or to improve the treatment. It may be convenient to allude to these divisions separately.

Inflammation.—Dr. Macartney's opinions are entitled to much consideration, from the long sustained reputation of their author. Those which especially recommend themselves to our notice from their novelty and their importance I shall mention. Dr. Macartney deems the views at present entertained, and in a great measure derived from John Hunter, erroneous, as regards the process of repair. He considers that the phenomena alluded to are not inflammation, but that, on the contrary, inflammation is adverse to them. It will perhaps be ever very difficult to determine the exact point below which, if I may be so allowed to express myself,

the actions or the efforts of an injured part are directly and entirely reparative, and above which they tend, in very various degrees, either to a more indirect mode of reparation, or, on the contrary, to destroy that which they cannot repair; still, with respect to the question whether these are or are not modifications of the same actions, I must with great deference say that my own opinion accords with that ascribed to Mr. Hunter. Dr. Macartney's strongest arguments appear to be those derived from analogy between the higher and lower animals; to this we cannot trust without much reserve, and it would be most easy to prove that a very large proportion of the phenomena, unquestionably inflammatory, are directly calculated to effect sanative effects in the economy of the former.* If this question were confined to the process of the reparation of wounds by the first intention, it would not have been very material; but if the doctrine leads further, as it really does, and we are rather to regard inflammation as the opposite in all cases of the reparative process, it must be viewed with great distrust, and the many facts which tend to establish a contrary opinion, ought to be well weighed before it is received. Dr. Macartney has also called the attention of the profession to what he denominates the modelling process. It may perhaps not be erroneous to consider it as only constituting a part

* Dr. Macartney appears to consider the reparative process to be one of mere nutrition, "equivalent to the original tendency to produce organic form and structure, &c. &c.," p. 7; but we have pretty strong evidence that this is very remarkably modified; thus the nutritive process in muscle of course forms the same structure, but in case of division, a substance analogous to tendon, and so in others.

of that admirable endowment by which every structure of every living being is enabled, more or less perfectly, to repair injuries of any or every kind. It is, however, certain that although throughout Mr. Hunter's work we find that his mind was fully alive to the existence of such reparative powers, he never set it forth in terms sufficiently clear, and the profession will feel their obligation to Dr. Macartney for bringing it more distinctly before them.

Dr. Alison,* whose powers of research and acuteness of reasoning are widely acknowledged, has made, as is well known, many interesting experiments on arteries which are intimately connected with this branch of pathology. These tend to show that under the inflammatory condition their elasticity is impaired, and their contractile power greatly diminished. With reference to the former state, it might perhaps be suggested as a subject of experiment, whether, in the inflammations which ensue from the bites of venomous animals, this change in their physical state is a necessary concomitant, for it almost appears too sudden; as also whether, when bleeding succeeds in putting an immediate stop to inflammation, their elasticity is as immediately restored, for if any cases occur wherein inflammation exists without this change in their elasticity, it cannot be regarded as a necessary condition. Connected also with other experiments of Dr. Alison, and immediately with the subject of inflammation, as well as many other morbid states, is the important question lately agitated as to the spontaneous motion of the blood. This has been

* *Edinburgh Journal*, January, 1836. *Report of British Association*, vol. iv.

inferred from the observation of a curious fact, viz., that the globules appear to possess a power of individual and independant motion; but how far the circulation of the general mass of the blood, of which these globules constitute but a very small proportion, can be explained by any power of movement they alone may possess, is a matter I should conceive very problematical. These experiments are however highly interesting, and the arguments command attention. They bring into doubt the well known doctrines of Bichat regarding asphyxia; Dr. Alison is disposed to believe that it rather arises from the want of vital movement usually imparted, as he supposes, by the oxygenated air in the lungs to their contents, and adopts the opinion of a recent French author, that there is "*une jeu d'attraction et repulsion*" between the living fluids and the air. It is, however, to be remarked that the phenomena may be equally explained by supposing that the influence of the aerated blood is exerted on the side of the vessels or canals in which it moves, or on their nerves, and it must also be recollected that this argument ends altogether with the pulmonary circulation.

I am bound also to mention the recent experiments and opinions expressed by Majendie,* connected as they are also with this branch of pathology. Throwing aside, and with great contempt, the opinions of those who believe in the existence of a vital power, he at once resolves into mere physical phenomena, not only the various movements of the circulating fluid, but the changes which are so wonderfully

* Lectures published in *Lancet* for October, 1838, and the following months.

wrought in parts under injury and disease. As it appears to me the duty of those who lay their reports before you to comment on the matters submitted, I have done so, and, I hope, with becoming deference, certainly with no intention of offence, but I equally feel it a duty I owe you not to enter into anything approaching to controversy; on this point, therefore, I shall observe a respectful silence, and at once proceed to say that M. Majendie has stated facts which, from such a person, command our attention, and, if fully confirmed, must tend to very important conclusions. He states that the blood is adapted to the circulation through the minute vessels in consequence of the changes produced in its physical qualities by the presence of fibrine, and that, if this be very deficient, an obstruction occurs in the vessels, becoming the cause of inflammation. It must, however, be understood that this can only be an occasional cause, since inflammation often occurs where no deficiency of fibrine is manifest. He also states the following conclusion, which, it must be confessed, accords not a little with some well known morbid phenomena, namely, that repeated abstractions of blood, by removing the fibrine and deteriorating the quality of the circulating fluid, as he supposes, often actually produce the effects they are intended to prevent or remove. He also affirms that an excess of alkalinity of the blood will cause its effusion into the tissues, and induce inflammation of the membranes.

I must not in this place pass over the labours of Mr. Palmer.* We have at last seen an author

* The edition of *Hunter's Works*, published by Mr. Palmer, 1837.

undertaking what with reference to most other medical works would be deemed an humble, though often a laborious but very useful task, viz., the publishing a new edition: with reference to Hunter's immortal treatise, however, it is of a much higher character, since he has given what had never been done before, a commentary worthy of it. To incorporate, as it were, the recent discoveries in general science and pathology with that work, to point out its errors, and to confirm many of its leading doctrines, required much research, much judgment, and much candour; and the rising generation, if not the actual race of medical practitioners, are under great obligations to the gentleman I have alluded to, for the manner in which he has executed it. This Association will, I am sure, also pardon me, when in mentioning the name of Hunter, I am enabled to say that we owe to a surgeon of my own city, a friend of my own, and a member of this Association, Mr. Ottley, a life of that individual, far more suitable to his distinguished merit than the meagre notices we have hitherto possessed.*

Besides the memoirs I have mentioned, others on the subject of inflammation have been recently published by Rasori, Morgan, and the authors of various systematic treatises, as well as various dissertations connected with the pathology of the vessels and alterations in the secretions,† but to go into

* In bestowing this well deserved praise on that part of the edition to which I now particularly refer, I ought not to omit that the whole has been conducted with great ability, and it may suffice that I mention the names of Owen, Bell, and Babington, to assure my readers that this is the case.

† *Carswell's Fasciculus*, No. xii.; Gulliver on Pus; James Earle in *Medical Gazette*; Paine in *American Journal of Sciences*, May, 1838, &c. &c.

these, would occupy far too much of your time; I shall, therefore, confine myself to a few statements relative to the second point I have alluded to, namely, treatment.

To Dr. Macartney we are certainly indebted for a more effective method of applying steam*—that important agent in many varieties of inflammation; to him also, in no small degree, but more especially to some eminent French surgeons, and M. Josse of Amiens very particularly,† we owe plans of using cold water with a constancy and effect which formerly were rarely obtained, and from which very valuable results have arisen. To the efficiency of this mode I can myself willingly testify, though it must be confessed that the good effects of the practice have been, as commonly happens, exaggerated; nevertheless, it is no small matter to be able to state, that by far the most powerful external means of which we can avail ourselves in combating inflammation have thus been rendered more effective than they were before.

The use of solid argentum nitratum as a remedy for inflammatory diseases has been extended to incipient croup,‡ to the vagina in morbid discharges from this canal,§ and it has even been applied to the bladder in chronic inflammation of that viscus; and it is stated on good authority,‖ with remarkable advantage. While considering the extended em-

* *Macartney on Inflammation*, p. 176, *et seq.*

† *Mélanges de Chirurgie.*

‡ By Peronneau and Hatin; *Reveu Médicale*, October, 1837, as mentioned in *British and Foreign Quarterly*, October, 1838.

§ Hannay; *Medical Gazette*, May 6th, 1837.

‖ Dr. O'Bryan; *Dublin Journal*, September, 1838.

ployment of this agent, it is but justice to Mr. Higginbotham to allow, that the increasing experience of the profession confirms in an unusual degree the accuracy of his statements as to the qualities of this remedy for many forms of inflammation, especially of the surfaces of the skin or mucous membranes.

To every zealous member of the profession, especially to those who have either felt in their own persons, or witnessed in others, the terrible consequences of the absorption of morbid poison from dead human bodies, it must be a source of great satisfaction to know, that a mode of preventing their occurrence, which appears to be far more successful than any hitherto employed, has been proposed on the authority of Dr. Macartney.* I mean the use of a saturated solution of alum, and his statements are confirmed by Dr. Kendrick.†

Experience has now amply shown that any preconceived opinions as to the nature of inflammation generally, which blindly lead to the adoption of a depleting or lowering plan of treatment in *all* cases, are erroneous. Inflammation to be studied with success, must be observed in its different varieties. I feel warranted in stating this, when it is in my power to say that bleeding and other antiphlogistics have been fully acknowledged to be injurious in *some* forms of acute inflammation. I may mention purulent opthalmia in particular:‡ that, on the contrary, wine has been resorted to with advantage

* *Observations on Inflammation.*

† *Dublin Journal.*

‡ M. Sanson, as stated in a memoir on the subject by M. Julliand; Tyrrell in *Medico Chirurgical Transactions*, vol. xxi.; and Dr. Graves also, I think, in *Dublin Journal.*

in the earliest stages of others, as in certain varieties of erysipelas;* and that the most severe kind of peritonitis that can be imagined, namely, that produced by the escape of the contents of the bowels from wound or rupture are treated with the greatest chance of success by large doses of opium—a practice first recommended by Dr. Stokes,† and borne out by two very remarkable cases related by our able associate Mr. Toogood.‡ I may add that M. Malgaigne has insisted much on the advantage of treating inflammation arising from operations or injury by large and repeated doses of this important remedy; and if it is allowed that the excess of inflammatory action is commonly due to an excessive sympathy, we shall be at no loss to understand how a remedy so admirably adapted to control this, should prove so highly beneficial. In many cases the best antiphlogistic is support adequate to the occasion.§

I cannot quit this subject without again reverting to the brief but striking memoir of Mr. Alcock,‖ already mentioned, in which, while he has done justice to the efforts of a small band of members of our profession, whose conduct and whose sacrifices well deserve to be commemorated, he has also recorded facts of great practical value. I more particularly allude in this place to his account of the gangrenous fever, which attacked so many of our unfortunate countrymen at Vittoria. It appears to

* Williams in *St. Thomas's Hospital Reports*, No. iii.

† *Edinburgh Journal.*

‡ Mentioned in *British and Foreign Quarterly* for January, 1837.

§ *Observations on Inflammation*, p. 217.

‖ *Notes of the Medical History of the British Legion.*

have been in a great measure produced by the use of tainted corn, in conjunction with the usual influences of want and misery; presenting a strong analogy with those more chronic and more local maladies, which are induced by the ergot of rye.

I could have wished to give a more ample report on the improvements in remedial measures, a subject of the greatest practical importance, and one in the successful study of which our British Schools of Medicine may unhesitatingly claim the first place, but I must content myself with a few remarks. The more efficient application of cold and heat has just been adverted to: I may add that Mr. Searle has introduced the application of a new material in the treatment of burns, viz, treacle spread and applied cold on calico; and Dr. Greenhow in the same accident has recommended the old remedy of oleum terebinthinæ and unguentum resinæ, but in a different mode, being laid on as a complete coat with a brush; in both cases these must be considered as modifications of the principle not many years since proposed, and now fully established, of protecting injuries produced by heat from the influence of the atmosphere. The various preparations of iodine have, as before mentioned, been found of admirable use in syphilis. If in the stethoscope we were presented with more ample means of diagnosis in thoracic disease, in Mr. Jeffreys' valuable instrument we have again a great addition to our means of combating them. Opium has been recommended as a remedy in ulcers of the legs, and its *modus operandi* suggested by Mr. Skey.*

* On a new mode of treatment in the Cure of various forms of Ulcer and Granulating Wounds.

Although the treatment is not altogether new, it is recommended by arguments which are so, and deserve much consideration. Its use by Mr. Pott in senile gangrene, which Mr. Skey mentions, was perhaps analogous; and Sir Gilbert Blane* appears formerly to have employed it in the West Indies with success in the class of complaints Mr. Skey mentions.

MIDWIFERY.

The subject of Midwifery has strong claims on our attention. Mr. Crosse very justly took occasion to express his opinion of its extreme importance; and the alterations which have lately been manifested with respect to it in the sentiments of those Bodies with whom rests the power of controlling its regulations, will be viewed with much satisfaction. No department of practice requires greater talents, greater skill, or more readiness and self command; in short, whatever would qualify a man for the highest rank in his profession, is essential for success in this.

The period on which I am called upon to report, has produced many important works and valuable memoirs on this branch of medical science. Those which have appeared in our own country would alone be sufficient to occupy the space which can be devoted to its consideration. Those of Dr. Hamilton, Dr. Churchill, Dr. Montgomery, Mr. Ingleby, Dr. Ashwell, Dr. Conquest, Dr. Collins, &c., may be mentioned as contributions of great value; of these, the one perhaps which deserves to be more especially noticed, is that which we owe to the last

* Mentioned by Dr. Paris in his *Pharmacologia;* article, Opium.

mentioned author. Placed in a situation where he had ample means of ascertaining facts, he has abundantly done justice to his position; and his sound sense has been equally shown in the admirable manner in which he has arranged his materials and expressed his opinions on the most important practical points.

In considering the improvements in obstetrical science, I shall still pursue the course which I have followed in the early part of this report, that of proposing to your attention suggested or allowed improvements in the more important diseases or contingencies which belong to it, with such comments as may appear justifiable to offer; but shall avoid the more doubtful, and perhaps invidious task of formally noticing the works of particular authors.

The Signs and Symptoms of Pregnancy still offer an interesting field for medical research, and also engross, in no small degree, the attention of the general enquirer; Dr. Montgomery's work on this subject* contains much valuable matter, and among the interesting topics which he discusses, there is one which concerns every accoucheur to be informed of, namely, the standard period of pregnancy, and this, as far as he has been able to ascertain, is two hundred and eighty days, or forty weeks, and not thirty-nine as heretofore commonly stated.

Some important information with respect to the *Length of the Chord* has been given by Dr. Churchill.†

* *On the Signs and Symptoms of Pregnancy.*

† On the Length of the Chord and its Mechanical Influence on Parturition—*Dublin Journal,* March 11, 1837.

He states that it is generally long enough for the safe delivery of the child without slipping it over the head, and that drawing it down will suffice. Be this as it may, it certainly often appears to retard delivery.*

There is a point on which very little satisfactory information, if any, has been afforded by authors on midwifery, till a very recent period. I mean the proper practice in cases of *cross* or *arm* presentation, when the death of the child has been ascertained.

Dr. Clarke, of Dublin, suggested, and Dr. Collins† has since fully adopted, a plan which is perfectly rational, viz., as the child's life is out of the question, not to hazard the mother's by turning, but to accomplish the delivery by opening the thorax, and acting on the child's pelvis with the crotchet, so as to convert the presentation into that of the breech; a proceeding which also has the sanction of Dr. Ramsbotham.

The *Cæsarean Section* continues to be performed with success. Dr. Meyer has operated a fourth time.‡ Three of the women have done well. The circumstances of another case are very remarkable, the same woman having been four times saved by this operation, by Dr. Michaelis, of Kiel.§ Professor

* I may mention that he describes, as connected with the decidua vera, the appearance of several cotyledons or suckers attached to, or embedded in the substance of the uterus, and filled with a milky fluid, which he conjectures may be a source of nourishment for the fœtus.

† *Collins' Midwifery*, p. 71, *et seq.*

‡ *British and Foreign Quarterly*, No. iv., p. 568.

§ *British and Foreign Quarterly*, No. viii., p. 521. Another extraordinary case is that of a woman who was gored by a bull in the eighth month of pregnancy. *Archives Generales de Medicine, par M. Regne.*

Gibson, of Philadelphia, whose zeal for medical science will be respected by every one engaged in it, has also performed this operation successfully* a second time. It is highly satisfactory to know that in the extreme emergencies which sometimes occur, such valuable lives may be rescued from the very jaws of death ;† but the possibility of avoiding the necessity of an operation so terrible, is of far more pressing importance ; and we are indebted to Dr. Churchill for an important memoir on this subject.‡ Having ascertained from the reports of several hundred cases of Cæsarean section, that more than half the mothers were lost and very few of the children saved, he follows up the arguments used by some of his predecessors and cotemporaries in favour of inducing premature labour in cases of contracted pelvis; and after stating the limits as to size, in which on the one hand it would be unnecessary, and on the other useless, rests the propriety of the practice on this important fact, that out of a large number of cases, the mother's life was lost only in a small proportion (fourteen in four hundred and twenty), and of the children more than half were saved. Dr. Churchill is at some pains to argue the morality of the conduct; but supported by such facts, it can be little doubtful.

* *American Journal*, May, 1838 ; also his own *Institutes of Surgery ;* also *Duchateau of Arras, Medical Gazette*, vol. xix., p. 830. The mother and child lived.

† From a valuable communication which we owe to Dr. Lee, which having been published since July, it would be improper I should enter upon here ; it appears that the results of the Cæsarean section in *this* country have been less fortunate.

‡ *Dublin Journal*, September, 1838.

The difficulty arising from the existence of *Tumours* in the region of the pelvis is analogous to that occasioned by its actual contraction ; and the same arguments which will in the one case support the propriety of the proceeding, will equally do so in the other, when the tumour itself can neither be removed, reduced, nor displaced. Dr. Ashwell, therefore, with much propriety, argues for its employment in cases of this kind.* With respect to the best mode of bringing it on, it may be stated that there are recent communications from Dr. Paterson, of Glasgow,† and Dr Ramsbothom,‡ in which they advocate the use of ergot.

Of all the causes of mortality during the process of parturition, *Puerperal Fever* is perhaps the most destructive. Medical writers continue their endeavours to illustrate its nature and improve its treatment. An author of very great experience, and of an unprejudiced mind, Dr. Collins, has added his opinion to that entertained by many, that the exciting cause is not of an exclusively specific character, and that it may be produced in all its severity by other poisons, as typhus ; and there is also weighty evidence of its having been occasioned by erysipelas. The preventive treatment adopted in the Dublin Lying-in Hospital is highly deserving of attention ; but with reference to the management of these cases, I ought to mention that Michaelis has recommended in very strong terms the use of ice in this malady, both applied externally and given

* *Guy's Hospital Reports*, No. ii.

† *Medical Gazette*, June 1st, 1839.

‡ *Medical Gazette*, June 15th, 1839.

internally. He also states that in a very severe epidemic of this kind which occurred at Kiel, it was observed that when the attack came on after an interval of a few days, the patient commonly recovered, but when very shortly after parturition, it proved almost invariably fatal—a circumstance, I apprehend, agreeing with the experience of others, but which it would be important to confirm.

In Puerperal Convulsions occurring previously to the dilatation of the os uteri, Dr. Collins has employed the tartrate of antimony with much advantage,* and Mr. Ingleby fully concurs in the recommendation.†

Two very interesting cases of *Rupture of the Uterus*, from which the patient recovered, have been given by our associate Mr. Toogood,‡ who with much justice attributes this favourable event to abstinence from bleeding, and the liberal use of opium.

The treatment of females after parturition is a subject which has always engaged attention ; but it may be doubted whether the bias has not been too strongly in favour of a lowering system : cases do often occur where such a plan is injurious, and Dr. Hamilton, whose long experience entitles him to much deference, advises, when the habit is irritable and susceptible, the early use of broth and other suitable support, as well as the general employment of warm spirit and water to bathe the external parts, which he says does not check the lochia.

* *Practical Treatise.*

† *Facts and Cases in Obstetric Medicine, &c.*

‡ *British Annals of Medicine,* January 20th, 1837.

There is no more dreadfully distressing infirmity than that which results from the Sloughing of the Bladder after Parturition. I believe the palliative treatment long since proposed by my friend and colleague, Mr. Barnes,* is found occasionally useful, but the resources of modern surgery have been freely employed to obtain a permanent cure for this miserable defect. This has been attempted by an operation of plastic surgery, the flap being obtained from the labium and inside of the thigh. M. Jobert succeeded in two cases; a third died.† Professor Dieffenbach has also published a memoir,‡ in which he strongly advocates the plan of uniting the fistulous edges, when pared, by suture.

Enlargements of the Uterus of an anomalous kind are not unfrequently met with at all periods of life, and, for various reasons, have occasioned great uneasiness. A case of much interest, and probably not unfrequent, has been published by M. Duparque;§ it occurred in the virgin state, and was mistaken for pregnancy.

Dr. Ashwell, in addition to the valuable memoir on Tumours of the Body and Cervix of the Uterus he formerly gave, has contributed another on the not unfrequent occurrence of Hæmorrhage from the

* *Medico-Chirurgical Transactions*, vol. vi.

† *Gazette Medicale*, No. x., xiii., and xiv. The third patient died of phlebitis. Mr. Beaumont has invented an ingenious instrument for uniting the edges of these fistulæ, which is described in the nineteenth volume of the *Medical Gazette*, p. 335.

‡ *Berlin Med. Zeit.*, June, 1836.

§ *Traité Theorique et Pratique sur les Alterations, Organiques, &c. &c., de la Matrice*, p. 511–12.

Uterus, excited by the presence of hard tumours within that organ.*

The application of argentum nitratum in Cancerous Ulcerations of the Cervix Uteri, to allay the irritability and correct the fœtor, has been recommended by various practitioners; the strength about ten grains to the ounce of water.

Two cases of fatal Hæmorrhage proceeding from vascular tumors of the uterus have been related; one by Professor Killian, of Bonn;† the other is described by Dr. Carswell.‡

My friend, Mr. Hunt, of Dartmouth,§ has given a very interesting paper on the use of arsenic in certain Affections of the Uterus, particularly those attended with undue menstrual discharge, or over-irritability of that organ; he shows that the action of arsenic on the genitals had been particularly noticed by writers on poisons, and gives many cases to prove that this substance (alike, I may say, potent for good or evil,) exerts great and peculiar power over this organ when in a disordered state. My own opportunities of trying it have been limited, but would lead me to think his recommendation well founded.‖

* *Guy's Hospital Reports*, No. vi.

† *British and Foreign Quarterly Review*, October, 1836.

‡ *Fasciculus on Hæmorrhage*, fourth plate.

§ *Medico-Chirurgical Transactions*, vol. xxi.

‖ Mr. Fenner has recommended the use of a different kind of speculum from those heretofore employed. It is a cylinder of glass sufficiently strong to avoid any risk of breaking, and its introduction facilitated by a projecting cushion formed by bladder distended with air, or of wood similarly shaped, and capable of being withdrawn.—*Medical Gazette*, May, 1839.

For Prolapsus Uteri new methods of treatment have been contrived; that of Osiander has this in particular to recommend it, that it not only gives temporary support, but also goes to the permanent cure of the malady. It is by the introduction of small linen bags into the vagina, stuffed with finely powdered oak bark, moistened with wine, and supported externally. The opinion of the profession has also been very favourably expressed with regard to Dr. Hull's ingenious instrument, the object of which is to remove the pressure of the superincumbent viscera from the uterus. The efforts of art, however, have not rested solely on palliative measures: Mr. Crosse alluded on a former occasion to the plan proposed by Dr. M. Hall, and practised extensively by Dr. Fricke; Dieffenbach also has succeeded in this plan of producing union of the sides of the vagina,* thus presenting a permanent obstacle to the descent of the uterus. Dr. Evory Kennedy, the present master of that noble institution, the Lying-in Hospital, at Dublin, (a successor not likely to diminish the high fame those who fill that office have been wont to acquire,) has employed the actual cautery to induce a sufficient degree of contraction of the vagina to accomplish the same intention;† and Mr. King, with a similar view, has employed nitric acid.‡

Dr. Barlow's memoir on the treatment of Ovarian Disease is fresh in the recollection of those I address. Another member of our Association, Mr. Jeaffreson, has recorded a case in which he successfully extir-

* *Medicinische Zeitung*, No. xxxi., 1836.

† *Lancet*, June 8th, 1839.

‡ In a paper, I think, read to the Medico-Chirurgical Society.

pated the cyst of an ovarian tumor (not adhering) through a small incision in the linea alba,* and also mentions that Mr. King, of Saxmundham, has since repeated the operation with a similar result.

Dr. Simpson's communication respecting the diseased state of the placenta was noticed by Mr. Crosse; an additional memoir by the same author relative to the Diseases of the Fœtus in Utero† now claims our particular regard, since it is not improbable that further observation may lead to important practical results; at present, however, it may be sufficient to say, that although much attention has of late years been paid to this branch of pathology on the Continent, in this country it has been little attended to prior to the labours of the author alluded to above.‡

* *Transactions of the Provincial Association*, vol. v.

† *Edinburgh Journal.*

‡ Although the immediate practical importance of these enquiries may not appear, there are some points, especially connected with the subject of inflammation, which it strikes me may receive considerable elucidation from the phenomena which have been and may be observed in parts so circumstanced as those of the fœtus and placenta. The latter is an organ so peculiarly constituted, that a comparison of the phenomena it presents with those occurring in others, is well calculated to refute or confirm many hypotheses which have been entertained respecting the influence of the circulating powers on their production, and, as regards the fœtus, it is clear that we have to contemplate a being existing under conditions quite peculiar; its temperature is uniform—air is excluded—external violence can hardly affect it—there are no ingesta, except as far as the liquor amnii is absorbed and becomes a source of nutrition; yet it appears that inflammation, especially in the form of peritonitis, is no unfrequent occurrence, and if two causes not often operating be set aside, namely, accidental intus-susception, or rupture of the bladder, all others it must be presumed must act either through the nervous system of the mother, or through the blood, and if the latter, how powerfully does this tend to support the humoral pathology.

Perhaps the bold and successful operation lately introduced by Dr. Conquest,* will find a better place in the conclusion of this section than elsewhere. In cases of Hydrocephalus he has adopted the practice of evacuating the fluid by tapping, and after the experience of ten years has found ample reason to recommend it, for out of nineteen cases on which he has operated, ten were known to be alive when he made the communication to which I now allude.† He perforates one of the lateral ventricles with a fine trocar, introduced midway between the crista galli and the anterior fontanelle; pressure is applied during the evacuation of the fluid, and the head is afterwards strapped with adhesive plaster. The principle of this operation may be ascribed to Sir A. Cooper, who first employed it in spina bifida; but the success in hydrocephalus is most remarkable, and no small credit is due to Dr. Conquest for undertaking so bold a measure, when the frequent failures of the other well conceived plan was calculated to deter him from prosecuting it in a situation apparently so very hazardous.

Before concluding this very imperfect sketch of the progress of surgery, there are two or three points of general interest on which I must still further trespass on your time by a short notice. It is not

* Note by the Secretaries.—An operation in many respects similar to Dr. Conquest's, and attended with complete success, was performed by Dr. Vose, of Liverpool, as far back as July, 1817, the particulars of which are narrated in the ninth volume of the *Medico-Chirurgical Transactions*, in a paper entitled "Case of Hydrocephalus successfully treated by the Removal of the Water by Operation, by James Vose, M.D., of Liverpool."

† *Lancet*, March 17th, 1838.

improbable that my distinguished colleague may also allude to them, since they are important to every class of the profession; should this be the case, I shall be truly happy if our opinions are found to coincide, since every thing which falls from his pen is entitled to great deference; if they do not, when the subjects are such as fairly to challenge a doubt, it is often advantageous to place them in a varied light.

The first point to which I shall advert, is the recent employment of the *numerical method*,* not only as an instrument of testing the accuracy of statements in medical science, but as affording the most advantageous principle of practice. Viewed in the former light, and also as constituting what has been denominated medical statistics, it may be confidently averred that nothing has contributed in a more eminent degree to establish truths which had been overlooked, or to refute errors which had been generally entertained; and those who have chiefly contributed to advance this knowledge have earned the gratitude of mankind in most instances, not by their persevering industry alone, but by their sagacity. As long as the numerical method is restricted to the observation of those facts to which it is really applicable, and to evolve conclusions sufficiently borne out by them, it must be of the utmost value. If I were called upon to state examples of its throwing light on subjects of immense importance but hitherto little heeded, I would, for one, point to

* Dr. Bardsley has on a former occasion, and in forcible terms, alluded to this subject; but I conceive it to be the duty of those who are selected to report on the progress of medical science, to continue from time to time their researches on subjects of especial interest, and to bring them again before you.

the returns* which have been recently made from our own West India Colonies; and of these perhaps it is not too much to say that they impressively show this melancholy fact, that of all classes residing there, those who undergo the most overwhelming calamities are our own gallant soldiers, whose health and whose lives have in many instances been squandered with an inconceivable recklessness, since there is good reason to believe that the evil might have been, and may be now, exceedingly mitigated; indeed it is gratifying to find that at length it is receiving the attention its urgency demands.† Again, I would say in a country where commerce possesses a claim to public regard stronger than in any other on the surface of the globe, it must be of paramount importance to determine the propriety of those cautionary regulations to which we have, whether justly or unjustly, attributed our own im-

* Tulloch's Memoir in the *United Service Journal;* Parliamentary Statistical Report of Sickness, Mortality, &c., among the Troops in the West Indies; and a very able Review of it in the *Edinburgh Journal,* October, 1838.

† Nothing can more clearly show what might have been done, and, what is more to the purpose, what may be done, to reduce these casualties, than the result of a change of system in the construction of barracks. In the second volume of *Papers published on Subjects connected with the Duties of the Corps of Royal Engineers,* is a Memoir by my friend Captain Smyth, R.E., p. 233, in which, I may be allowed to state, he shows how the talent of military men may be employed, as well in preserving as in destroying human life. Barracks were built in Demarara under his direction during five years, which led to the following differences in the mortality of the troops:—in 1825, they were twenty-one per cent.; 1826, eighteen and two-thirds; 1827, twenty-five; 1828, twenty-two; 1829, seventeen. During the last three years of his residence the numbers were as follow:—1830, eighteen and two-thirds; 1831, thirteen and two-thirds; 1832, five and one-fourth. Captain Smyth was stationed there from 1828 to 1833, and the remarkable diminution in the mortality may very fairly be ascribed to the cause mentioned above.

munity during nearly two centuries from one of the most destructive diseases which afflict mankind. Statistical facts perhaps are the only safe ground on which can be rested a reasonable plan of conduct in this matter; and if we refer to one which has been lately offered to us, it would make us hesitate exceedingly ere we adopted the recommendation of those who would persuade us to consider the quarantine laws as worse than useless. The document I refer to, is one by M. Bulard,* who states that out of the Mahometans residing in the great city of Smyrna, (containing one hundred and thirty thousand inhabitants,) and possessing every advantage of situation and cleanliness, but disregarding precaution, one in fourteen and a half fell victims to a recent visitation of that disease; while the Christians, inhabiting a confined and unhealthy part of the same town, but acting on the principle of seclusion, lost only one in three hundred and thirty-three.

The statistics of disease then, are calculated extensively to influence large portions of mankind, and it is not the medical philospher alone who is capable of dealing with them, but the general enquirer also; in the more immediate province of our researches, however, most valuable data have been obtained, and from their accumulation, strict examination, and careful comparison, many safe conclusions will ultimately be arrived at. Large additions have been made in the surgical department within these three years, but details of this nature, though advantageously appended, cannot be embodied within the compass of this address, and it remains for me to offer a few observations on

* Bulard's Memoir on the Plague.—*Dublin Journal*, July, 1838.

the second point to which I have alluded, namely, the immediate application of the numerical method as the proper principle of treatment applied to individual cases of disease. Since this principle has received the sanction of one of the greatest ornaments of our profession,* and has been enthusiastically adopted by no small number of its members, it is perhaps of all the topics submitted to your notice, the one which most demands strict attention and impartial judgment.

That the laws of numbers, when truly ascertained, will be found to apply to all large masses of population similarly circumstanced, cannot be doubted; but the questions will arise, whether these laws are as yet sufficiently determined—whether the modifying circumstances can be adequately appreciated—and whether the most talented members of the profession are capable of distinguishing in every *individual* case the just proportions in which they exist, without which, as a paramount rule of practice, it would be little safe to adopt it. If it be granted that the influence of age and sex may be calculated, how difficult is it to guage that of climate—situation—peculiarity of constitution—former habits—concurrent diseases—state of mind—and previous medical treatment. When we look to our tables, we may there see symptoms—facts—enumerated to infinity; but there are some which bid defiance to our endeavours to catch them—which can never be put upon our registers. Who, for instance, shall adequately pourtray the *physiognomy* of disease, or note the fluctuating tones of the voice? Yet these are amongst the truest exponents of the state of the

* M. Louis.

nervous system—that system which modifies and governs all the others; upon which the state of the tongue—pulse—respiration—greatly depend, or at all events with which they are inseparably connected; the spring which moves all the indices on which we chiefly rely for information.

Situation will so far modify facts as to invalidate all conclusions from numbers. The rate of mortality, for example, of a country where one in thirty-five die annually, as in the kingdom of Naples,* cannot afford safe data for reasoning upon with reference to another, where it is as one to fifty-two, as in England;† for it is most probable that the difference in the ratio is produced either by the greater suffering of particular organs, or the aggravation of some particular class of diseases. Deductions which apply to an agricultural population whose mortality is as one to sixty-two,‡ cannot be well extended to a town population, even in the same district, where it may amount to one in forty-four.§ Morbid appearances, as those existing in the alimentary canal in fever, have been generally remarked in one situation, and therefore adopted as

* Bissett Hawkins; Article, Statistics.—*Cyclopædia of Practical Medicine.*

† Rickman; *Medical Gazette,* January 23rd, 1836.

‡ Rickman; *Medical Gazette,* January 23rd, 1836.

§ That of Exeter, according to my friend Dr. Shapter, in the seventh volume of *Transactions of the Provincial Association,* p. 295.

These numbers, which are only true as regards some districts, are taken as fair approximations, not as absolutely correct, when applied generally; for, in the first place, tables of mortality differ more than could be expected; and, in the second, it is not necessary, to establish the present argument, (which is merely for a principle,) that more should be considered than the remarkable difference in the mortality of the same diseases under different circumstances of situation.

the cause of it; in others they have been only occasionally found, and therefore, as the cause, must be rejected.

Sanguine expectations have been entertained that in the progress of numerical observation medical science will attain a degree of exactitude equally complete as physical, and that the movements of the celestial bodies will be found not more amenable to our calculations than the laws which govern the progress and duration of disease. Certainly the strongest argument to which the advocates of the numerical method can point, is that which one of our most able medical statists has offered,—I mean Mr. Farr,—viz., the possibility of constructing such a table as to indicate with a remarkable approach to exactness, the regular increments and decrements of cholera; but it may be submitted, that one important circumstance appears to have been overlooked, namely, that in the full violence of the great epidemics, the influence of ordinary circumstances is swallowed up. In plague and cholera, and in many respects in yellow fever, (with the exception of age and sex, and that in a modified degree,) no other condition exhibits its wonted effect; but the moment we apply the test to other diseases, as, for instance, ordinary fever, very different results unfold themselves; and I believe I am warranted in stating, that even in this country the mortality differs in different districts and institutions in the ratio of eight to sixteen. Those who have fully surrendered their convictions to the infallible efficacy of placing medical science upon a sure footing by the numerical method, and

who call upon us to observe facts, and to count them, *but not to divine,* do not justly consider how often a fact may be observed to little or no purpose, until, as in the often quoted case of Newton, the cause of the phenomenon *is divined* by one superior mind.

I fear I have trespassed too much on your time in introducing this subject. I fear that my arguments, having been derived from the province of medicine rather than surgery, may be deemed an improper intrusion; and, if so, I have greatly to apologize not only to you but to my distinguished colleague; but they afforded me more forcible means of illustration than any derived from surgery at present exhibit, and if they confirm any views of the same subject Dr. Symonds may have formed, it will afford me the more satisfaction, and surely will then be pardoned by you. The very great importance of placing this comparatively new branch of inquiry upon its right footing, must be admitted by all; for while there is none likely to exert a greater and more important influence on its progress than the zealous but cautious cultivation of statistics in acquiring facts, no greater evil will be likely to arise than from the undue or premature application of these facts, to which the proneness of the human mind to exaggerate all advantages as well as all evils, ever too naturally disposes it; and it may not be too much to predict, that the benefits derived from the numerical method, important as they undoubtedly are, will be limited by a greater number of circumstances than is now contemplated by some of its most zealous prosecutors.

Another topic to which I feel it my duty to advert, is the remarkable fondness for the introduction of new terms in every department of medical science. Without for a moment questioning the propriety of abandoning those which manifestly involve an error, there were many free from any objection of this kind, because, purely arbitrary, and it would have been safer and perhaps better to retain them than to adopt others founded on scientific discoveries, in some cases questionable and liable, like their predecessors, to be reversed. Those who have witnessed with sufficient attention the repeated alterations which have occurred in our own times, will smile at the confidence now expressed in the immutable character of the technology of the day. A change of terms must be a positive good or a great evil. Amid the multiplicity of matters which engross our attention, it is very possible that confusion may arise, for we have the difficult task of unlearning what it has cost us some pains to acquire, and of learning that which is liable to be indistinctly impressed on our minds, just as one sign painted over another is often imperfectly pourtrayed. If new terms however are to be introduced, it would be well if they were checked by some competent authority, and not be thrown out the unlimited issue of individual speculation. For this evil I see no remedy at present except in the general jealousy of the profession, but that ought to be exercised to keep the prevailing spirit within moderate bounds.

It may be thought that I have ventured to glance at the rather excessive desire of this kind of change exhibited by the late codex of the College

of Physicians, which will tend much to countenance the practice in others; if this be so, it may perhaps be allowed me to make some amends by the expression of my grateful feelings on another point, in which I am sure I shall carry with me those of a large proportion of this Association. I am aware that it is the intention of Dr. Symonds to notice the alterations which the College recently made in their regulations; these are of a two-fold nature, and it is only to one that I feel I have any business to advert. The highest rank and privileges of the profession in this country have been assigned to the class of physicians only; and down to the present period, all who have cultivated medical science, with whatever degree of success, and however they may have stood in public estimation or have been distinguished in their private character, have been completely excluded from assuming that more advantageous position, unless for a long time they quitted their homes and field of practice, and perhaps at an advanced period of life submitted to the discipline of the schools; and few could be found to make such a sacrifice. The recent determination however of the College of Physicians has freely offered to those members of the profession whose age, ability, and character constitute suitable titles to consideration, a dispensation from the hard conditions on which alone they could formerly enter the portals of that venerable body, and invites them to offer themselves for such an examination as every man will be disposed to allow is requisite to preclude the possibility of depreciating the quality of a title which has been so long and so honorably sustained.

Many whose prime has been spent in indefatigable exertion, will now be enabled to continue in the autumn of their days, when less labour and higher estimation are the fair rewards of a life of diligence, that usefulness which the community could ill afford to lose, and which, in the less toilsome path they have to traverse, will be at once compatible with their bodily powers, and grateful to their inclinations. For this boon, which has marked on the part of the College a highly liberal feeling toward the profession, and a just sense, I might add, of what is due to the public and themselves, I feel that the present is a very fitting opportunity on the part of those to whom it has been offered, to make their grateful acknowledgments; and I doubt not that some will be found who will fully vindicate the judgment as well as the liberality of those men who have thus spontaneously and without clamour at their gates conceded this important alteration in their hitherto exclusive code.

I ought not in this place to pass unnoticed an act of the College of Surgeons, evincing, as it does, a desire to encourage among the junior members of the profession that spirit of emulation and zeal for science which are best calculated to bring forward talent wherever it may exist,—I allude to the recent establishment of studentships in human and comparative anatomy. Since the legislature of this country has always averted its eye from us, we must rejoice that the only body which commands the means of promoting or rewarding merit, is penetrated with the obligation of fulfilling this important duty.

Anatomy Act.—There is another point to which I feel it my duty to call your attention. It is the manner in which the Anatomy Act answers the purposes for which it was intended. The enactment of this statute forms no exception to the remark I have just made. We did not owe this, the nation did not owe it, to any zeal which influenced the legislature of this country to promote one of the most useful, one of the most important of all sciences; it was forced upon it by the horror of those crimes which were the fruit of their own supineness. These could no longer be tolerated; and the act I allude to was the result. But although the horrid murders which were perpetrated under the barbarous system which pre-existed have ceased, and the minds of men are no longer revolted by the scenes of nightly profanation which then were our continual reproach, and which tended to shade the character of a profession little assailable in other respects, yet it becomes us to inquire whether that care, that anxiety, has since been shown to provide for the due cultivation of anatomy, which might well be expected in an enlightened kingdom. Do the few short pages of that act prove the existence of such a spirit? Does the provision for its being carried into due effect exhibit the determination that its clauses shall be fulfilled?

Gentlemen, when I look at the innumerable statutes which are intended to preserve our wealth, when I count the sums which are annually expended by the state for its management and preservation, I cannot but ask myself whether "the body is not better than raiment," and whether some little portion of that extreme care might not well be be-

stowed in fostering those measures by which the health, the happiness, the moral, nay, the eternal well-being of our population may be so greatly promoted. They take a narrow view of this question who think that such important interests may be left to the selfish principle alone, and that for the lucre of gain the members of the medical profession will best promote the advantage of the nation, together with their own, under the influence of the same motives which have advanced the various arts and manufactures of this great country. I believe, Gentlemen, that *we* are actuated not only by the same prudential motives as our fellow-countrymen, but *also* by the nobler aim of exalting a profession which has been well described as approaching to a Divine character; but can we, unassisted, do all that is required? Is the assistance rendered to us so active, so constant, so universally applied, as to fulfil every intention? What are the means employed to direct and influence the persons who have the custody of those whom it was contemplated would become the unconscious means of enabling us to prosecute our studies? I am at a loss to give any answer; I speak of the provinces, and with no feeling of disrespect for the gentleman who superintends the operation of the act, but I must say that its objects, as far as I can judge, might be much better effected if sub-inspectors, unconnected with any district, were appointed to visit occasionally the various places where licenses to teach had been granted, and if the manifest countenance of the legislature were afforded to influence the parties who have the power of granting or withholding the means of sufficient supply.

I must not conclude this address without a very brief record of two men who, within the period referred to, have been taken from us.

The first of these had long finished a career of no ordinary celebrity. I mean Mr. Thomas Blizard. As a surgeon and as a man his merits were of the highest order; yet, with the exception of his remarkable skill and success as a lithotomist, I am not aware that his high reputation was supported by more than great practical excellence in every branch of surgery, as well as by his private character—sufficient claims, however, to public respect. His exertions were, as it is well known, rewarded by a more than usual share of pecuniary emolument, and at an early age he was enabled to quit its labours, and devote himself solely to the care of one he most dearly loved, and whose death preceded his own but by a very short space.

Of the second, my inclination strongly leads me to offer a rather more extended notice. Mr. Henry Earle was descended from a surgeon whose name will always be venerated, having been the grandson of Mr. Pott. His father also was long a surgeon of high rank in the metropolis. Early devotion to his profession, with the advantages he peculiarly enjoyed, soon placed him in a position which enabled him to cultivate our science with great success. His mind was active, clear, and capacious, and he was anxious to improve the knowledge of his art by all the means within his reach. One of the most useful inventions of modern times is due to him, and multitudes of sufferers have been rescued from death or disability of limb, by its extended use. I of course mean the bed which will always perpetuate

his name. Those miserable contractions which follow burns have also found an efficient mode of treatment in the plan he proposed for their cure; and, in addition, he was the author of various memoirs, both of a practical and scientific nature, which do credit to his ability. But if I am bound to praise him as a good and useful surgeon, I am still more called upon to declare that he was an excellent man. If the love and respect of his friends, the devotion of his pupils, the almost unexampled attachment of his family, can afford any proof of his claims to our regard, they may all be cited in the most unqualified manner; and it may be permitted to one who was among his earliest as well as his latest friends, to declare his conviction, that few men have passed through the world with stronger claims to its regard and esteem, than the subject of this hasty and imperfect sketch.

Gentlemen, I shall now conclude. This address has, I fear, made too large demands on your patience. For its length, however, I can hardly apologize. Far from having embraced all the important suggestions, all the interesting facts, which the history of surgery presents in the various parts of the civilized world, I am quite conscious that many have been overlooked, very many imperfectly noticed, and that the view which has been taken has ranged over the literature of foreign countries with a less comprehensive aim than it ought to have taken. I cannot, however, conceal from you my persuasion, that no one could do justice to a survey so extensive as the lapse of *three* years would require, when every part of Europe, and North

America, and our own extensive foreign empire, teems with men of talent and industry, labouring with unparalleled energy in augmenting the treasures of our profession, unless he produced a memoir too voluminous for delivery, if not for record on your pages; although every endeavour may have been employed to preserve the utmost brevity in noticing the various points which seem more especially to claim* attention. It appeared to me to be the better plan under such circumstances to select those topics which at all times command the greatest interest, and, in reference to them, to allude to those works which may be with confidence referred to, reserving the privilege of offering such observations as it is conceived would not be altogether irrelevant, without which the person who

* If any thing could prove the truth of this position, it would be a memoir which I have much pleasure in mentioning, namely, "The Retrospect of the Progress of Surgical Literature for the year 1838–9, by Messrs. Newnham, Wickham, and Salter," read June 13th, 1839, before the Southern Branch of our Association; of the existence of which I was not however aware, until I reached Liverpool the following month. While, on the one hand, it does great credit to the ability and industry of the gentlemen who drew it up, it also shows how many subjects remain (I might almost say necessarily) untouched in this address.

It may perhaps be right to state my reasons for having adverted, however briefly, to a few memoirs, which, having appeared prior to July, 1836, have been also the subject of comment by my predecessors; as, for instance, Dr. Macartney's work on Inflammation, which was spoken of by my friend Dr. Malden last year; it however appeared incumbent on me, in embracing the scope of *surgical* improvement for three years, not to pass over one so important. Fresh additions to our information on varicocele and circocele may excuse my reverting to the facts mentioned by Mr. Crosse on that subject; and perhaps the same reason may be adduced for my also referring to the memoir of Dr. Ashwell on the induction of premature labour. The peculiar position in which I was placed in delivering this address in Liverpool, would not allow me to pass over another subject so remarkably connected with that town, as the Excision of Diseased Joints.

prepared these reports would degenerate into a mere annalist, while the practice of all my predecessors shows that they were unwilling to be cramped by any such restrictions.

Of the many deficiencies of the present address I am well aware; they may however, and they will I hope, be in a great measure excused, when in a few words I state the circumstances which have so unfortunately fettered my exertions. A trial awaited me, of which, if I had known the extent, I must have declined the honourable task of preparing it, so kindly offered me; but at the moment it was made, I had reason to hope for a different event from that which it pleased the Almighty to determine. During the greater part of the time which has intervened, anxiety of mind and fatigue of body have been my lot, terminated only by a loss the most severe that can be sustained. Under such a pressure, the mind cannot always be brought to act with effect on subjects which are not of immediate urgency, and the hours which could be spared from professional pursuits were often devoted to an object of overwhelming solicitude. Conscious, then, that this address is likely to fall short of what, under more auspicious circumstances, I might have hoped to have effected, I must claim at your hands much forbearance; and I know that I shall not do so in vain, when appealing to men whom long habits of witnessing the misfortunes of the human race has never rendered indifferent to its distresses, nor unwilling to yield their sympathy when it is justly demanded.

PLATE I.

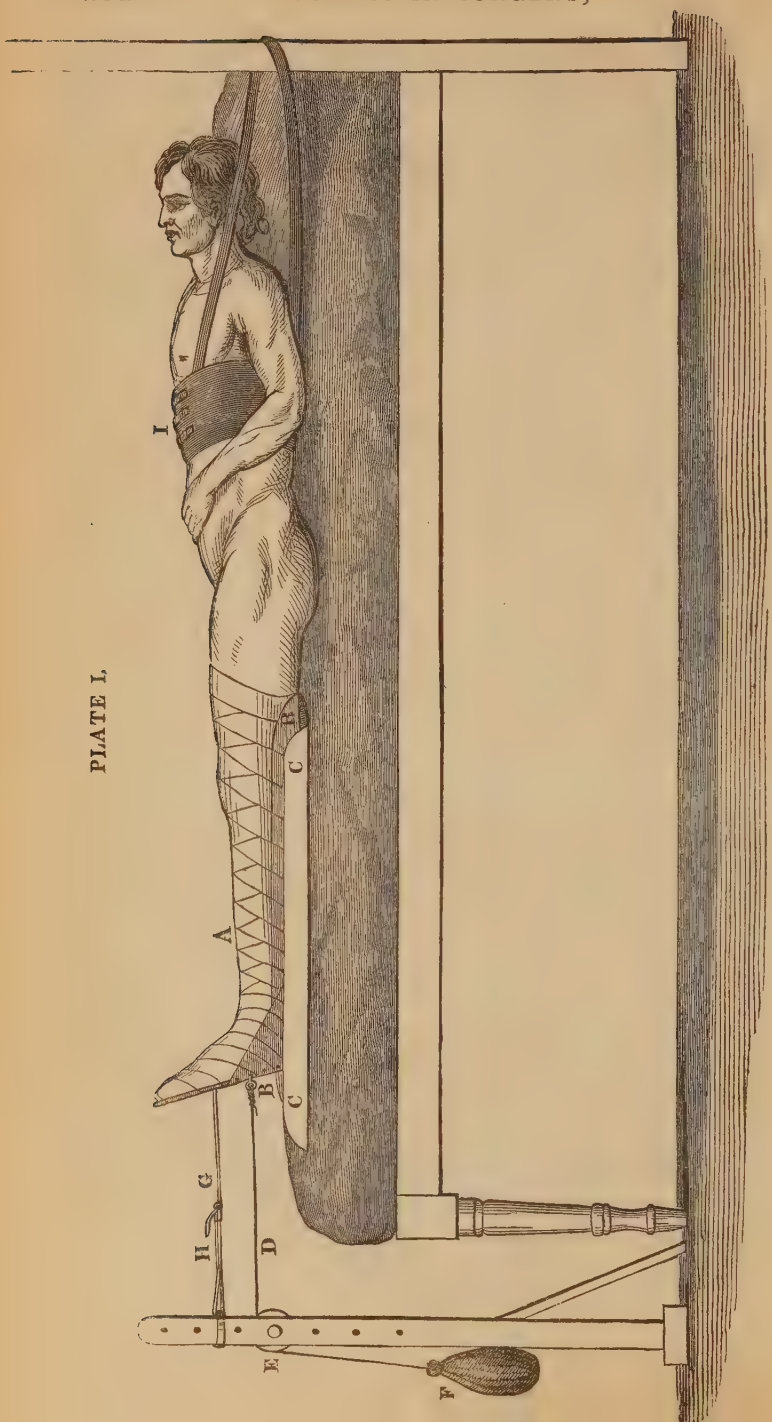
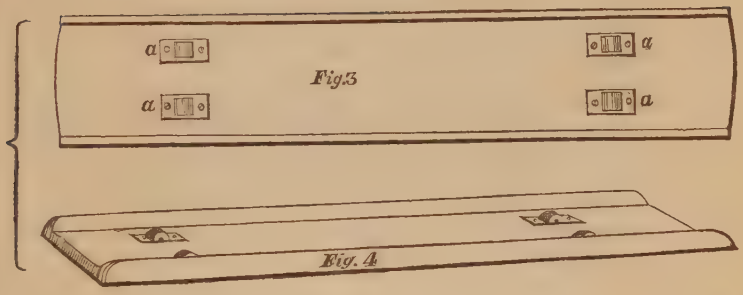
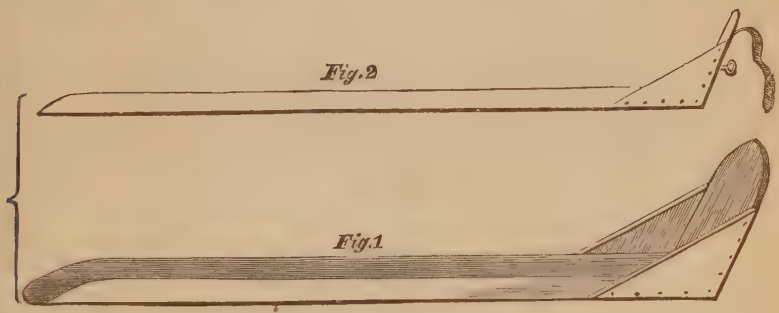
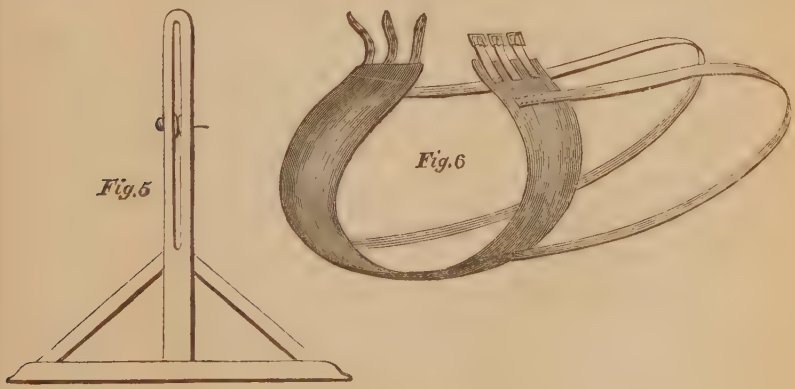


PLATE II.







REFERENCES TO PLATE I.

A. The leg bandaged and guarded—laid upon—and secured to the hollow splint, with foot-piece.

B. Thin hollow splint resting upon the casters, morticed into the wooden plane C, upon which it can easily slide.

D. A cord affixed to the foot-piece, and passing over the pulley E, is extended by any requisite amount of weight placed in the bag F.

G. A strap with a buckle, H, by which, when the limb is fully extended, the tendency to retract under the influence of the muscle is greatly contracted.

I. A rib bandage fixed to the upper part of the thorax, and secured to the posts at the head of the bed by ligatures extending from it: large soft towels should be placed along the arm-pits to avoid galling.

The extension may be rendered more powerful by placing two blocks under the posts at the head of the bed so as to give it an inclination to the foot. The splint which receives the leg should be well hollowed at the heel, and that carefully guarded. The line of traction should be rather a little upwards, otherwise the heel is pressed down.

REFERENCES TO PLATE II.

1. A side view of a hollowed splint on which the leg rests, being previously well guarded, and to which it is secured with bandages.
2. Shows the ring at the foot-piece, to which the cord and strap are affixed.
3. Horizontal representation of the plane of wood on which the preceding rests, and on which it can be readily moved as it rests on the casters *a*, *a*, *a*, *a*.
4. A side view of the same.
5. The staunchon fixed into the floor at the foot of the bed, and containing the pulley over which the extending cord passes.
6. A rib bandage with two ligatures attached which fix the thorax to the two upper posts of the bed.

ARTICLE IV.

OBSERVATIONS ON THE VARIOLÆ VACCINÆ,

AS THEY OCCASIONALLY APPEAR IN

THE VALE OF AYLESBURY,

WITH AN ACCOUNT OF SOME RECENT EXPERIMENTS IN THE

VACCINATION, RETRO-VACCINATION, AND VARIOLATION OF COWS.

BY ROBERT CEELY, ESQ.,

Surgeon to the Buckinghamshire Infirmary.

ILLUSTRATED BY ENGRAVINGS FROM ORIGINAL DRAWINGS.

Que chacun dise ce qu'il sait, tout ce qu'il sait, et rien que ce qu'il sait.—MONTAIGNE.

ARDENTLY admiring the genius and philanthropy of Jenner, and entertaining a corresponding estimate of the value of the discovery which has rendered his name illustrious, and constituted him one of the greatest benefactors of the human race, I nevertheless could not divest myself of sundry doubts on certain points of extreme interest and very great importance connected with the natural history of the vaccine, and the theory and practice of vaccination. These doubts were not of easy solution. They required for this purpose not only time, but a con-

currence of circumstances which I could scarcely hope to witness. Actuated, however, by the simple desire of observing, for my own personal satisfaction, the evidence upon which many of his fundamental conclusions were based, I sought, at an early period of my residence in this neighbourhood, to avail myself of those opportunities which the occasional occurrence of the natural and casual variolæ vaccinæ, and the existence of an ample field for vaccination, (if zealously cultivated,) seemed capable of affording.

The events which have occurred, and the discussions which have arisen during that period, have greatly enhanced the interest, and materially augmented the necessity of such an enquiry. The active and judicious steps taken by this Association prompted a more energetic and diligent pursuit; while the direct application of Mr. Dodd, one of the Secretaries of the Vaccination Section, on its first formation, for my humble co-operation in the investigation of the eruptive diseases of cows connected with vaccination and small-pox, furnished an additional motive which I felt it both impossible and improper to resist. His "Queries and Suggestions on observing the Vaccine," full of point and utility, have not been forgotten nor neglected during an active investigation of that and other contemporary and subsequent eruptive diseases which have prevailed in several dairies, during the last eighteen months, in the Vale of Aylesbury. The "Queries and Suggestions" of the same gentleman relative to my intended experiments, induced me no longer to postpone the commencement of a series which

I had long contemplated, and which nothing but an inability to procure suitable subjects had prevented me attempting during a previous variolous epidemic. The facts and arguments adduced and urged by the learned and able biographer of Jenner, in his late highly interesting work,* constrained me to persist in a course of experiments which my own observations had already taught me were difficult and troublesome of execution, and precarious in result. Biased by no theory, but impelled by an earnest and anxious desire to discover truth, these observations and experiments were made and conducted amidst the fatigues and demands of active rural practice, and, though few and limited, under difficulties and sacrifices which it would be useless to enumerate or describe. To those who are practically acquainted with the subject, any detail of them would be superfluous ; to others, a lengthened recital would be excessively tedious, if not altogether unprofitable. The manifold inherent and contingent difficulties to be subdued might well deter individual efforts, and defy private resources ; but an untiring interest has continued to urge, when other considerations ought perhaps to have restrained. The results of my humble but strenuous efforts, if they have no other effect than the corroboration and confirmation of the opinions and observations of others, will not, I trust, on so important and disputed a subject, be altogether without interest, or inappropriately placed in the *Transactions* of a Provincial Medical Association belonging to the country of Jenner, where, greatly to our discredit, less has been accomplished

* *Life and Correspondence of Dr. Jenner,* 2 vols., by Dr. Baron.

(if I am correctly informed,) in some interesting branches of this comprehensive subject than has been effected elsewhere.

In the hope and with the expectation that our provincial brethren, at least, will see what is due to themselves, to the Association, and to the profession, (if other considerations could be disregarded,)—that they will cultivate opportunities peculiarly their own, which more frequently occur than probably they are aware, I venture to offer the following hasty and imperfect sketch of still more imperfect labours. A subject which needed and obtained so much of the time and talents of Jenner, may, indeed, even for some of its less investigated parts, require the united and continued exertions of many. My own observations and researches, though commenced in scepticism, I have anxiously endeavoured to prosecute with all possible care and candour; and while I desire not to be considered as having pointed the way through a most intricate path, of which, in truth, I have but barely seen the entrance, it will be gratifying to me if a faithful record of them should arouse the enterprise or facilitate the progress of abler and more successful adventurers.—*Est quòdam prodire tenus, si non datur ultrà.*

TOPOGRAPHY.

The Vale of Aylesbury, which in natural fertility is considered scarcely inferior to Pevensey Level, or Romney Marsh, though for the most part composed of rich clays and loams, comprises within its limits most of the soils, variously intermingled, by

which the county is characterized, viz., rich loams, strong clay, chalky mould and loam upon gravel, in considerable variety. It extends from Thame in Oxfordshire on the south-west, to Leighton in Bedfordshire on the north-east, a distance of more than twenty miles. It is bounded on the south by a range of heights called the Chiltern Hills, which stretches across from the southern extremity of Bedfordshire to the southern part of Oxfordshire, being part of the great chain of chalk hills extending from Norfolk south-westward into Dorsetshire. On the west, at a distance of ten and twelve miles from the town of Aylesbury, which is situated nearly in the centre of the Vale, on a gentle eminence, it is bounded by a range of hills of the upper oolitic formation, constituting part of the chain which extends with interrupted continuity through Oxfordshire, Berkshire, and Wiltshire. The surface of the north and north-east border of the Vale at a distance of six or seven miles, is diversified by a cluster of gradually rising insulated hills of nearly similar structure, taking the opposite direction, and blending in the distant prospect with the hills of Hertfordshire and the Chilterns. The Chiltern Hills consist of clay, upon chalk, of different qualities, with occasional beds of gravel and sand, and, in many places, an abundance of brick earth. The surface soil of the valleys between the hills consists of rich clays and clayey loam, which, upon the declivities, are in some places very thin, and form a clayey chalk; on some of the hills the surface is clayey, and on others it is composed in a great measure of chalk.

The highest of the insulated hills on the west and north-west verge of the Vale, and on which is situated the town of Brill, has, near the surface, broken strata of brick earth, limestone, grit, red sand, ochre, and rubble, a firmly consolidated bed of oyster shells, and, amongst the iron sand, large nodules of bright yellow, interspersed with lumps of pure white, in various forms, but chiefly cylindrical; these all rest on a basis of clay of unexplored depth, the ochrous beds being interspersed between the other strata in thin layers, imparting their colour and quality to the neighbouring springs. Purbeck, Portland, or Aylesbury limestone, and Kimmeridge clay rise from the river Thame on the south-west, and culminate on Brill Hill with a thin covering of iron sand, this being probably the highest point of these formations in England.

Fossils in great abundance are found here, furnishing a rich harvest for the collector. Large fossil wood, crustaceæ, and many vertebræ and bones of saurian reptiles; oysters and muscles, beautifully preserved; Ammonites giganteus, nearly two feet in diameter, and several other species; Trigonia clavellata, costata, nodosa; Pholadomya acute-costata, æqualis; Pecten; Helix obtusa; a species of Teredo; Trochus; Venus, two or three species; clams of Astacus, Ostrea, &c. &c.

The lower grounds consist of deep tenacious clay, intermixt with shells, loam, and sand, of various colours.

The highest of the north and north-east cluster of hills at Quainton, is seven hundred and eighty-six feet above the level of the sea. The order of the strata

near the summit to the depth of fifty-four feet is as follows:—Vegetable earth, gravelly small stones, ochrous (yellow) earth, white (like pipe) clay, sandy loam, with red, white and blue sand, in small veins, under which are iron stone, fusible in a strong heat; loamy sand, beneath which is a thin layer of (sometimes interspersed) blue clay, resembling impure coal in colour, scarcely more than a foot thick; gray dirt and loam; hard blue solid stone; grey loamy sand and dirt, with a sub-stratum of Pendril stone, formed like bricks; stone called building stone, in masses often exceeding two tons; limestone; brown or yellow sand; rubble stone, containing ammonites, ostrea, small screws, and other fossils; brown sand; and stone of a dark green colour, called bottom stone, not very hard. At the foot of the hills, on a basin of blue clay, prevalent throughout the Vale of Aylesbury, are strata of coarse sand of divers colours, hard grit stone, various loams, but little if any intermixture of water-worn pebbles. Fossils abound here: bivalves, ammonites, from the smallest to nearly two feet in diameter, with four or five volutes; belemnites in the sand and ploughed up from the clay, with sea shells in good preservation; and selenites in the clay to the north of the village, at the foot of the hills near the water courses.

The Thame, with many tributary streams, having their origin in the neighbouring hills, abundantly waters the Vale, which, in wet seasons, in many parts, is subject to copious and extensive inundations. Under draining has of late years been pretty generally and from necessity practised, and with manifest advantage.

ENDEMICS.

Here bronchocele has been from time immemorial an endemic. It is found in all parts of the Vale, but more particularly on or near the hills. It is chiefly observed in females, especially those with fair complexions and lax flabby fibres; occasionally in males under similar circumstances. It is often hereditary; not unfrequently of an enormous size;* and occasionally congenital, occurring in several successive births. It is remarkable, however, that when congenital it always spontaneously subsides within the first six months of infancy. The encysted form is very rare. Struma in all its varied forms and wretched complications is unhappily the lot of numbers of the ill-fed, indifferently clad, and badly lodged peasantry. Dyspepsia and neurotic disorders abound.

EPIDEMICS.

Fevers of the intermittent, remittent, and continued type, dysenteric and acute gastro-intestinal affections, are annually epidemic, one or other prevailing according to the season of the year and existing constitution of the atmosphere. They are often found sometimes co-existent in the same village and in the same family, and not unfrequently intercurrent in the same individual. In the remittent and continued (or continuous remittent) types, if

* Although enlargement of the thyroid gland here seems in most instances to depend on the deposition of a glairy albuminous fluid in its cellular structure, yet now and then it appears to be composed of a compact and solid aggregation of calcareous particles, presenting to the touch a strong hardness.

of any duration or intensity, the intestinal mucous follicles are invariably implicated. Originating palpably in malaria, it is nevertheless equally clear that they are under the contingent influence of contagion.*

Like most of this central part of the county, from the Chiltern Hills northward to the Watling Street, the greater part of the Vale of Aylesbury is devoted to grazing and the dairy. An immense number of sheep, cows, and oxen are kept on these extensive pastures. The dairy farms are in general large, and in number and extent greatly predominate. The cows and grazing stock are for the most part bought in. The short-horned Yorkshire breed of cows is used principally for the dairy; Hereford, Devon, and Welch for grazing.

EPIZOOTICS AND ENZOOTICS.

In common with many other parts of the kingdom, this neighbourhood suffered much from the contagious epizootic which prevailed so fatally among horned cattle from the years 1745 to 1780. The places of interment of many of its victims are yet pointed out, and the dismal tales of its ravages are remembered by many with whom I have conversed.

* In the observation of the rise, progress, variation, and decline of these kindred epidemics, it is impossible to forget the graphic descriptions of Sydenham, of those occurring in and near London in his time; or the later and very interesting accounts of the Gottingen mucous fever, by Rœderer and Wagler. Distressing as these visitations are to the unhappy poor, and harrassing as they prove to the country practitioner, yet he cannot fail to derive some compensation in the interest these cases excite. Having obtained from experience and reflection correct principles of treatment, he may, with safety, pleasure, and advantage, often recur to the consideration of the theories and precepts of Clutterbuck, Armstrong, Broussais, Louis, Smith, Maculloch, and others.

In wet seasons the sheep suffer extensively with the "Liver Rot," a disease which at the same time assails hares and rabbits.

Lately the disease which has for the last twelve months prevailed so extensively on the Continent, the aphtha epizoo'tica,* has appeared among us, but not very extensively. I have seen it rapidly pass through one large dairy. Its mode of attack is not uniform in the same situation. Some have the characteristic vesicles on the membrane of the mouth, lips, and tongue, on the teats at their apices, and also on the heels; while others have only the mouth and tongue affected, others only the heel, and most with different degrees of severity.

From the general richness and luxuriance of the pasturage, and especially in wet seasons like the past, dry cows,† and even young heifers, are attacked with inflammation and induration of the udder, called the "Garget," a disease which has been more than usually prevalent throughout the past summer.

Besides the true cow-pock, the variolæ vaccinæ, the milch cows here appear to be very subject to the following eruptive diseases and spurious pocks:—Inflammation and induration, sometimes suppuration of the cutaneous follicles at the base of the teats: small hard knots, cutaneous or sub-cutaneous in the same locality, about the size of a vetch, a pea,

* For information on this recent epizootic, I must refer to the *Veterinarian* for September last,—a very able periodical, in which medical men may often find very interesting papers and remarks; and to an elaborate and very excellent article in the *Dublin Journal of the Medical Sciences* for the same month, translated from the French of M. Rayer.

† Cows not in milk.

or even larger, which often remain indolent for a time, at length become red, vesicate, enlarge, suppurate, and burst after attaining not unfrequently the size of a walnut or more, occasionally affecting the hands of the milkers, and often the other cows milked in the same shed by the same hands: an eczematous eruption, with intertrigo on the udder and near the roots of the teats: warty growths of two kinds; one consisting of long, narrow, pendulous, and linear-shaped prolongations, easily removed, and often detached; the other of short, thick, compact, broad elevations, lighter in colour generally than the ground from which they rise, of various sizes, from that of a pea to that of a horse-bean, frequently very numerous on the teats, where they are often found bleeding and partially detached: *the Yellow Pock;* a pustular eruption resembling ecthyma on the teats and udders, succeeded by thin, dirty brown, or black irregular crusts: *the Blueish or Black Pock;* bluish, or black, or livid vesications on the teats and udders, followed by thin, dirty brown, or black irregular crusts, and some degree of impetigo on the interstices, near the basis of the teats: *the White Pock;* a highly contagious disease among milch cows and to the milkers, quickly causing vesications and deep ulcerations; often or almost always confounded by them with the true vaccine, and certainly not readily distinguishable in all its stages by better informed persons than milkers.

Before entering into a detailed description of these eruptive diseases or spurious pocks, I shall proceed to the consideration of the variolæ vaccinæ as they

appear:—1st, naturally, or are produced casually on the teats and udders of cows by the manipulations of the milkers; 2ndly, by vaccination; 3rdly, by retro-vaccination; 4thly, by variolation.

GENERAL OBSERVATIONS.

The *variolæ vaccinæ* seem to have been long known in the Vale and neighbourhood. They have been noticed at irregular intervals, most commonly appearing about the beginning or end of spring, rarely during the height of summer; but I have seen them at all periods from August to May, and the beginning of June. By some it is presumed that cold and moisture favour their development; by others that the hard winds of spring, after a wet winter, are supposed to have the same influence. I have, however, seen the disease in the autumn and middle of winter after a dry summer. The disease is occasionally epizootic, or prevalent at the same time in several farms at no great distance, more commonly sporadic or nearly solitary. It may be seen sometimes at several contiguous farms; at other times one or two farms, apparently under like circumstances of soil, situation, &c., amidst the prevailing disease entirely escape its visitation. Many years may elapse before it recurs at a given farm or vicinity, although all the animals may have been changed in the mean time; I have known it occur twice in five years in a particular vicinity, and at two contiguous farms, while at a third adjoining dairy, in all respects similar in local and other circumstances, it had not been known to exist for forty

years. It is sometimes introduced into a dairy by recently purchased cows. I have twice known it so introduced by milch heifers. It is considered that the disease is peculiar to the milch cow,—that it occurs primarily while the animal is in that condition,—and that it is casually propagated to others by the hands of the milkers. But considering the general mildness of the disease, the fact of its being at times in some individuals entirely overlooked, and that its topical severity depends almost wholly on the rude tractions of the milkers, it would perhaps be going too far to assert its invariable and exclusive origin under the circumstances just mentioned; yet I have frequently witnessed the fact that sturks, dry heifers, dry cows, and milch cows milked by other hands, grazing in the same pastures, feeding in the same sheds and in contiguous stalls, remain exempt from the disease. Many intelligent dairymen believe that it occurs more frequently as a primary disease among milch heifers; but I have not been able to confirm this remark by my own observation. It does not appear to be less frequent on the hills than in the Vale. It has been seen primarily on the stall-fed as well as on the grazing animal.

Origin of the Disease.—I have met with several intelligent dairymen whose relatives had seen good reason to ascribe its occurrence to the contagion of the equine vesicle, communicated by the hands of the attendant of both animals; but very little of that disease has been noticed of late years, though I know of several farriers who have been affected from the horse, and resisted subsequent variolation or vaccination, and have seen a few who distin-

guish between the equine vesicle and the grease, a recurrent disease—eczema impetiginodes—as it appears to me. For many years past, however, the spontaneous origin of the variolæ vaccinæ in the cow has not been doubted here. In all the cases that I have noticed I never could discover the probability of any other source.

There is much difficulty in determining with precision, at all times, whether the disease arises primarily in one or more individuals in the same dairy; most commonly, however, it appears to be solitary. The milkers pretend in general to point out the infecting individual; but as I have more than once detected the disease in a late stage on an animal not suspected of having it, I am not very prone to confide in their representations, unless my own inspection confirms or renders them probable.*

In some animals the disease being mild, and their tempers good, little notice is taken of tenderness in milking, which is of frequent occurrence; whereas an ill-tempered animal, with not more of the disease,

* An early conviction of the necessity of almost entire self-dependance in these dairy investigations soon led to the adoption of the following rules:—

1st.—Not to be too fastidious in my footsteps.

2nd.—To be on the best possible terms with the milkers.

3rd.—To obtain all possible information from them, and believe nothing important which could not be confirmed.

4th.—To enquire into the temper and habits of every animal to be inspected.

5th.—To inspect with gentleness and caution, remembering that there was danger from behind as well as before.

6th.—Never to be without a small pocket lanthorn, glazed with a thick plano-convex lens, wax candles, and the means of ignition, either to explore in the absence of daylight, or to obtain a perlustration of parts on which daylight can rarely impinge.

being very troublesome to milk, is sure to be considered the infecting source. Moreover, in the same dairy, at the same time, with the true disease, some one or other of the spurious forms may occur in some individuals, causing difficulty in milking, and producing deep sores on the milkers' fingers, thus complicating the investigation and deceiving the indiscriminating milkers. The very frequent occurrence of inflamed, tender, and chapped nipples, in connexion with the time and mode of milking in closely arranged stalls, and in comparative darkness, renders these men in general unsuspicious of any specific disease till it has made pretty extensive progress through the shed. Their general incompetency to distinguish between the true and the false eruptive diseases, added to the above disadvantages, often creates insuperable difficulties in obtaining very important information, and frequently precludes implicit reliance on it when obtained. Hence another source of the numerous inherent difficulties which attend these investigations, and hence the cause of late intelligence precluding successful enquiries, and not unfrequently the loss of all knowledge of the fact of the existence of the disease; hence also the multitude of vexations, perplexities, and disappointments which too often await the enquirer after facts, and the searcher after lymph. For the acquisition of a very moderate amount of real knowledge on this subject, much time and many sacrifices are required, since actual personal observation is indispensable; and even then it is only after extreme vigilance, quickened by repeated disappointments, with much inconvenience and considerable labour,

that some of the objects sought can be obtained. The remote causes appear to be entirely unknown.

Condition of the animal primarily affected.—Here, again, the difficulties above mentioned often thwart enquiry, and the preliminary signs of the disorder are rarely noticed. Yet it must be admitted that this fact, though negative, justifies the presumption of the absence, in many instances at least, of any appreciable or very notable constitutional derangement. In the majority of instances I could not learn that food was refused, or any palpable febrile indications were noticed. In August, 1838, three cows were affected with the disease: the first was attacked two months after calving, and seven weeks after weaning. This animal was considered in good health, but to me appeared out of condition: it had heat and tenderness of teats and udder as the first noticed signs. The other two were affected in about ten days. In December, 1838, in a large dairy, a milch cow slipt her calf, had heat and induration of the udder and teats with vaccine eruption, and subsequent leucorrhœa and greatly impaired health; the whole of the dairy, consisting of forty cows, became subsequently affected, and some of the milkers. In another dairy, at the same time, it first appeared in a heifer soon after weaning, and in about ten or twelve days extended to five other heifers and one cow milked in the same shed, affecting the milkers. In another dairy, at the same time, thirty cows were severely affected, and also one of the milkers. It appeared to arise in a cow two months after calving. The only symptoms noticed were that the udder and teats were tumid, tender, and hot, just before the disease appeared.

Condition of the animals casually affected.—There is rarely any manifestation of fever or constitutional disturbance. In some seasons it appears milder than at other seasons. In some animals it is less severe than in others, depending on the state and condition of the skin of the parts affected, and the constitution and habit of the animal. It is sometimes observed to diminish the secretion of milk, and in most cases commonly does actually affect the amount artificially obtained, beyond which, and the temporary trouble, plague, and accidents to the milk and the milkers, little else is observed: the animal continues to feed and graze, apparently as well as before.

The topical effects vary much in different individuals, whether primarily or secondarily affected, the mildness or severity being greatly influenced by the temperament and condition of the animal, and especially by the state of the teats and udder, and the texture and vascularity of the skin of the parts affected. Where the udder is short, compact, and hairy, and the skin of the teats thick, smooth, tense, and entire, or scarcely at all cracked, chapped, or fissured, the animal may and often does escape with a mild affection, sometimes only a single vesicle. But where the udder is voluminous, flabby, pendulous, and naked, and the teats long and loose, and the skin corrugated, thin, fissured, rough, and unequal, then the animal scarcely ever escapes a copious eruption. Hence, in general, heifers suffer least and cows most from the milkers' vaccinations and manipulations. Dark red and red-spotted animals are often seen more affected than those of a lighter

colour, as might be expected, from the occurrence in them of the respective conditions above mentioned.

Progress of the disease.—The variolæ vaccinæ once arising or introduced, and the necessary precautions not being adopted in time, appear in ten or twelve days on many more in succession, so that amongst twenty-five cows, perhaps by the third week nearly all may be affected; but five or six weeks or more are required to see the whole number perfectly free from the disease on the teats at least.

The facility with which the disease may be and often is propagated by the milkers, is very remarkable. In December, 1838, on a large dairy farm where there were three milking sheds, the variolæ vaccinæ first appeared in the home or lower shed. The cows in this shed being troublesome, the milker from the upper shed, *after milking his own cows*, came to assist in this for several days, morning and evening, when in about a week some of his own cows began to exhibit the disease. It appears that having chapped hands, he neglected washing them for three or four days at a time, and thus seemed to convey the disease from one shed to another. During the progress of the disease through this shed, one of the affected cows, which had been assailed by its fellows, was removed to the middle shed, where all the animals were perfectly well. This cow being in an advanced stage of the disease, and of course difficult to milk, and dangerous to the milk pail, was milked first in order by the juvenile milker, for three or four days only, when, becoming unmanageable by him, its former milker was called in to attend exclusively to it. In less than a week all

the animals in this shed showed symptoms of the disease, though in a much milder degree than it had appeared in the other sheds, fewer manipulations having been performed by an infected hand.

The progress of the disease, however, is not always so readily or so satisfactorily traced; and I have felt induced to think sometimes that more than one animal has had the natural form in different parts of the same dairy. Nor is the disease necessarily communicated to all the animals milked by the same hand: not only do some older animals escape, but I have seen several times young milch heifers, exposed to all the circumstances favouring contagion amidst the rest of the herd, entirely escape.

Topical symptoms of the natural disease.—For these we are almost always, in the early stage, by reason of the circumstances above mentioned, compelled to depend on the observation and statements of the milkers. They state that for three or four days, without any apparent indisposition, they notice heat and tenderness of the teats and udder, which are followed by irregularity and pimply hardness of these parts, especially about the bases of the teats and adjoining vicinity of the udder; that these pimples, on skins not very dark, are of a red colour, and generally as large as a vetch or a pea, and quite hard; that in three or four days many of these having increased to the size of a horse bean, milking is generally very painful to the animal, the tumours rapidly increase in size and tenderness, and some appear to run into vesications on the teats, and are soon broken by their hands; milking now becomes a troublesome and occasionally a dangerous

process. It is very seldom that any person competent to judge of the nature of the ailment has access to the animal before the appearance of the disease on others of the herd, when the cow first affected presents on the teats acuminated, oval, or globular vesications, some entire, others broken, not unfrequently two or three interfluent. Those broken, have evidently a central depression with marginal induration; those entire, being punctured, effuse a more or less viscid amber-coloured fluid, collapse, and at once indicate the same kind of central and marginal character. They appear of various sizes, from that of a pin's head, evidently of later date, either acuminated or depressed, to that of an almond, or a filbert, or even larger; dark brown or black, solid, uniform crusts, especially on the udder, near the base of the teats, are visible at the same time; some, much larger, are observed on the teats; these, however, are less regular in form, and less perfect; some are nearly detached, others quite removed, exhibiting a raw surface, with a slight central slough. The forms of the crusts on the udder are either circular or ovoid, slightly acuminated or depressed, and the crusts seem imbedded in or surrounded with more or less indurated integument. On the teats the crusts are circular, oval, oblong, or irregular; some flatter, others elevated and unguiform, several irregular, some thin and more translucent, being obviously secondary. The appearance of the disease in different stages, or at least the formation of a few vesicles at different periods, seems very evident. The swollen, raw, and encrusted teats seem to produce uneasiness to

the animal only while subjected to the tractions of the milkers, which it would appear are often nearly as effective as usual.

Most commonly, however, the observer, instead of seeing the above phenomena, does not arrive at the dairy until the cicatrices are nearly healed on the animal first affected, when he commonly finds the greater part of the animals in the same house in different stages of the disease. When he is fortunate enough to have an opportunity of watching the disease in its progress through the different parts of a dairy, and can carefully and diligently inspect all the animals in succession, he may observe the

Topical symptoms of the casual Variolæ Vaccinæ.— It is very rarely that any indications of contagion, after undoubted exposure, are manifested before the sixth or seventh, sometimes not till the eighth or ninth day; but a vigilant observation of thin-skinned animals, with chaps and cracks on the teats, will exhibit small red, rather tender papulæ near the udder and on the body of the teats about the fifth day. On the sixth and seventh day, in cows with white clear skins, on the lower parts of the udder are observed circumscribed indurations, generally of a reddish colour, and of a circular, ovoid, or lozenge shape, as large as a vetch or a pea; a few are still larger, six lines or more in diameter, and have a central depression very palpable to the finger, in which is visible a small, dirty, yellowish white discolouration, surrounding a still darker dot or line, sometimes angular, thus · — ≺; these indurations are often interspersed with minute red papulæ of a darker colour, rather acuminated, often with abraded

summits. Some of the tumors* contain within their centres a slender amber-coloured, yellowish brown, or brownish black crust, these being less tumid and prominent than those without the crusts; they are all very tender, even when slightly compressed. On the teats, especially on the lax and extensile skin of their base, similar tumors are observed, often in considerable numbers, generally circular, about the size of a vetch or a pea, some even smaller; on the bodies, and even to the apices of the teats, they are also numerous, and frequently ovoid, from ten to fifty or more. On all these parts of the teats the circumscribed intumescence and induration is less apparent and less defined than on the udder; but the pearly or glistening lustre of their margin and part of their centre is nearly as manifest. In animals with dark skins, at this period, the finger detects the intumescent indurations often better than the eye; but when closely examined, the tumors present at their margins and towards their centre a glistening metallic lustre or leaden hue; but this is not always the case, for occasionally they exhibit a yellowish or yellowish white appearance. Those in which a central crust has formed are readily detected, and on others which have been compressed, or had the cuticle abraded, there appears a crystalline amber-coloured translucent mass of concrete lymph on the surface, sides, and vicinity, leading to the detection of what might otherwise have been overlooked. On

* I use the word "tumors," not because I think it correct, but merely in contradistinction to the elevations which are *palpably* vesicular.

the eighth and ninth days, in animals with fair skins, on the udder, some of the tumors appear with more central depression, and more elevation of the margin, which is solid, uniform, tense, and shining, extending to seven or eight lines, of a glistening white, pearly, or silvery hue, and in the centre of many is observed a blueish or slate-coloured tint. Around the base is often apparent a narrow pale rose or light damask areola, not more than a line or two in width. In others the central crust is increased, and is yellow, brown, or black; a few appear a little pustular in their centres. On the teats corresponding changes have taken place in the tumors which remain entire; a few small conoidal vesicles also appear to have subsequently risen; some have a slight depression on the apex; they may be found from the size of a pin's head to that of a pea. But generally, the majority of the tumors are more or less abraded or otherwise injured, either by the animal while recumbent, or by the merciless manipulations of the milkers; hence is seen lymph exuding from the centres, with cuticle loose or partially detached, raw surfaces, brown or black crusts, either primary or secondary, and here and there the cuticle entire raised from the centre of the tumour, forming a vesicle of a conoidal shape, often slightly depressed at its apex with a dark central spot, and distended with pellucid lymph, around which there is generally some appreciable intumescence and induration. Many tumors are found coalescent and several vesicles interfluent. In very dark-skinned animals, instead of a blueish tint of the centre of the tumors, a leaden-coloured or metallic glistening

hue is apparent there and over the intumescent margin. In those less dark, with thin skins, a yellowish or dirty yellowish white, sometimes pustular appearance is observed in the centre and on the margin, and instead of a well-defined surrounding areola there is in some perhaps a reddish brown or tawny hue; but in all, heat and circumscribed induration, especially where the skin is thick, corresponding to the limit of the areola in others.

Between the tenth and eleventh days the disease in general reaches its acmé. On the udders the tumors are often from eight to ten lines in their largest diameter, and in white skins the centres and central edges of the intumescent margin are of a deeper blue or slate colour, and the areola, which is usually of a pale rose colour, is seldom more than four or five lines in extent, under which the integuments are deeply indurated. Lymph, which two days before was difficult to procure from beneath the cuticle of the central depression of some tumors, is now so copious that it raises the cuticle, forming a globular or conoidal vesicle, or freely flows out from its rupture. Other tumors have a greatly extended brown or black central crust, either slightly acuminated or depressed, encroaching on the marginal intumescence; others have become flatter, entirely encrusted, and perfectly passive. On the teats, the few which remain unbroken undergo similar changes, but appear to have less extent of areola, and less circumferential induration; the skin here being loose and extensile, the coalescent tumors are more or less abraded, and have acquired primary brown or secondary black crusts, or a combination

of both; the interfluent vesicles are more or less covered with brown or black, oblong, irregular, solid or unguiform, strong, compact crusts, or, denuded of cuticle, are raw, swollen with elevated margins, discharging blood, lymph, and pus. On and after the twelfth day, on the udder nearly all is passive; the central brown or black crusts have rapidly increased, and the marginal induration and intumescence have proportionately subsided; the few remaining unbroken vesicles gradually acquire a brown or blackish hue, shrink, and desiccate within their subsiding induration. The central crusts above alluded to, if undisturbed, though they may become thicker and darker and more compact, seldom increase in breadth after the thirteenth or fourteenth day. The marginal indurations within which the central and vesicular crusts are always enclosed, though they now and then, for a day or two, seem irregularly to renew their former elevation, gradually subside, and have nearly disappeared on the spontaneous separation of the crusts, which takes place on the twentieth or twenty-third day; but even then some traces of induration are left surrounding the cicatrix or pit, which is shallow, smooth, oval, or circular, of a pale rose, white, or whitish colour, according to the contrast of the surrounding pigment.

On the teats about this period—the twelfth day and onwards—around their base, the tumors and vesicles which are left entire, exhibit the like appearance; central crusts of various sizes, brown or black, imbedded in less indurated marginal elevations; vesicles in various degrees of advancement towards desiccation; some with flaccid, flattened

cuticle, of the colour of the surrounding pigment; others, more advanced, with yellowish light brown, and others desiccated into dark brown and blackish, slightly acuminated or centrally depressed, oval or circular uniform compact crusts. On other parts of the teats, out of the way of the milkers, and where the tumors or vesicles have been small, few, or solitary, the same may be observed; but most commonly, and always where these have been large, numerous, and coalescent or interfluent, the skin thin, loose, and vascular, and the animal inordinately irritable, a very different state of things is observed. Large black solid crusts, often more than an inch or two in length, are to be seen in different parts of these organs; some firmly adherent to a hard and elevated base; others partially detached from a raw, red, and bleeding surface; many denuded, florid red, ulcerated surfaces, with small central sloughs, secreting pus and exuding blood; the teats excessively tender, hot, and swollen. Not unfrequently one or more teats form a tumid mass of black crusts and naked red sores, secreting a discharge which imparts to the finger that touches it an odour strongly resembling that which emanates from a patient in the last stage of small-pox. In some animals, under some circumstances, this state continues little altered till the third or fourth week, rendering the process of milking painful to the animal, and difficult and dangerous to the milker. In many, however, little uneasiness seems to exist; the parts gradually heal; the crusts, though often partially or entirely renewed and renewed, ultimately separate, leaving apparently but few deep,

irregular cicatrices, some communicating with the tubuli lactiferi, the greater part being regular, smoothly depressed, circular, or oval. Occasionally warty or fungous growths succeed some of the deeper ulcerations. It not unfrequently happens that the central deeper part of the depressed cicatrix, even when not very large, continues to retain a thin flimsy irregular incrustation, (secondary or tertiary,) as late as the end of the fifth week, or even longer.

Varieties, Anomalies, and Analogies.—Although the medical observer, practically acquainted with the varieties and anomalies of the vaccine disease in man, will neither be much surprised nor long perplexed at less obvious though strictly analogous occurrences in the cow; yet there are some particulars connected with this part of the subject which appear to me not unworthy of remark.

The normal course of the natural and casual disease is completed in about twenty or twenty-three days, viz., four days, in the natural form, from the probable period of invasion (in the casual, three or four from the presumed period of incubation,) to the appearance of the eruption; six or seven from this period to the full development and perfect maturation of the vesicle; five or six from its decline to perfect desiccation; five or six from this period to the spontaneous separation of the crust, and the formation of the cicatrix. Irregularities however, both real and apparent, are observed. In the natural disease the first two stages often seem materially abridged. In the casual, the first seems prolonged, and the second proportionately abridged; or the first is prolonged, and the second and subse-

quent stages are normal. In both forms the third stage seems often abridged, sometimes prolonged. Lastly, the eruption is not always simultaneously developed. All these irregularities do occur, some more frequently than others; but some of them are very often merely apparent anomalies.

It would frequently appear, from the representations of the milkers, that the eruption in both forms of the disease reaches its acmé in four days; and this would be perfectly correct if we could admit that the period of detection was coeval with the period of eruption; but in very few instances, on their parts, does this appear to be the case. It has been already stated that these men rarely, if ever, detect any precursory fever; they often disregard the first occurrence of topical heat, and as seldom notice the first period of papulation. Nor is this in the least to be wondered at: it is, in truth, very difficult for an experienced observer at all times to escape error in this latter particular, and oversights will occur to the most vigilant from various causes, especially from peculiarity of colour, vascularity, and texture of skin, as well as temperament of the individual. It is indeed surprising, at times, to observe with what suddenness and rapidity the second stage appears to be completed, seeming scarcely to occupy more than three or four days. In this, of course, we see nothing more than what is occasionally observed in man from various causes. Greater difficulty in detecting the commencement of papulation in the cow, however, is the fruitful source of apparent anomalies of this kind; but vigilant observation, I am persuaded, by leading to

the earlier detection of the obscure indications of this stage, will materially diminish their number. Topical heat, slight discolouration, slight tenderness, some induration, will often exist three or four days before any well-defined circumscribed tumefaction is perceptible. When the corium and epidermis are thin and vascular, the pigment not very dark, and the examinations are carefully and repeatedly made in a good light, the respective stages are better observed, and fewer irregularities are apparent. Although the exact period of incubation of the casual disease cannot always be positively determined, yet there seems good reason to believe that it is occasionally prolonged from five to eight days, the subsequent stages being perfectly regular.

The abridgement of the third stage, or the too early appearance of turbidity in the lymph, or the premature occurrence of vesicular desiccation, and the circumstances upon which these and other real and apparent anomalies depend, are well deserving of consideration. In order that they may be more correctly appreciated and better understood, it seems necessary to furnish an analysis of the principal phenomena of the eruption in connexion with some of the varied circumstances under which they arise; and this I shall proceed to attempt, although it must necessarily involve some repetition, which to many, I fear, will prove tedious, and be deemed superfluous. The eruption commences in papulæ, which have their seat in the corium. They are not always simultaneously developed, either in the natural or casual form. In size and colour the papulæ differ according to their age, the thickness

and colour of the skin. In thin, fair, and vascular skins, at a very early period, they resemble flea or bug bites, and are of a deep rose red; they become in a day or two as large as a pea, and have frequently a dark damask or even livid hue, which gradually diminishes as they acquire their vesicular character. In very dark skins of this texture, at this period, some degree of redness, a coppery-reddish brown, or a tawny hue, is observable. In thick skins, though fair, the colour is much paler, and is, of course, sooner lost. In dark thick skins, and even in flesh-coloured skins if very thick, the red colour is often entirely wanting, or is scarcely appreciable. Here, therefore, the papulæ are seldom noticed till they have acquired the size of a vetch or a pea. They feel hard, raised, more or less round, are hot and tender. Many of these varieties may occur at the same time in different parts of the same animal.

In three or four days from their first appearance, the papulæ acquire their vesicular character, and have more or less of central depression; continuing gradually to increase, in three or four days more they arrive at their fullest degree of development, and sometimes are surrounded with an areola, and always embedded in a circumscribed induration of the adjacent skin and subjacent cellular tissue. The first change in the pimple is indicated by the appearance at its apex of a dull or dusky yellowish point; the circumference gradually increases in substance and extent, and the centre becomes wider and deeper; at length a flattened vesicle is formed, with a dimpled or depressed centre. The degree of central depression differs not only in different stages

of the vesicle, but also in different animals, and in different parts of the same animal at the same time. It is in general more considerable about the fifth or sixth day of its formation. In very fair skins, (especially on the udder,) just before the appearance of the areola, and in very dark skins of a slate, blue, or black colour, where no areola appears, the depression is better felt than seen; but in the former a dirty ochre or dusky spot in the centre is rarely ever absent to aid the eye. The depression is sometimes wanting in some small vesicles on the teats at their early stage; but it appears in the middle or termination of their course, and is again entirely lost. An anatomical examination of the structure of the vesicle just before it attains maturity shows that its colour, indurated margin, and central depression, depend on the existence of an adventitious membrane formed in the corium and secreted by the papillæ. It is raised in the form of a zone, and is intimately connected with the epidermis. It has a cellular structure, in which is secreted and contained a clear viscid lymph. The cells appear to be arranged in two concentric rows, and are separated from each other by whitish radiating partitions, which, at their converging extremities, are united by a central membranous band. The dusky central spot which marked the first change of the pimple into the vesicle, and which has now become darker and more distinct, seems to be caused by a greater or less degree of separation and desiccation of the epidermis, stretched over a crypt-like recess, which contains a small quantity of semi-concrete lymph-like matter, occasionally a

turbid opaque fluid. This cellular, adventitious, membranous conformation, though differing in texture and amount in different vesicles, is invariably present, and is not less essential than diagnostic. About the fourth or fifth day of the eruption, or two days before the decline of the vesicle, there often appears at its base a red circle, which gradually increases in extent till that event occurs. During this period the lymph within the cells, having become more abundant and less viscid, and somewhat opaque, bursts and breaks up the cells and their connecting band, separates the epidermis from its attachment to the subjacent adventitious membrane, and the vesicle, losing its central depression, becomes more or less acuminate, presenting a conoidal or semi-globular form. The lymph soon acquires a pale straw-colour or light amber hue, and speedily becomes more serous, turbid, and opaque. Acumination of the vesicle, however, is not always confined to this period. It takes place earlier, later, or never occurs. It is earliest in small, comparatively superficial vesicles, which seem to resemble the supernumerary vesicles in children; is later in thick skins, not very vascular, being postponed till the tenth, eleventh, or twelfth day of the disease. It is earlier on the teats where the cellular tissue is more lax, than on the udder where it is more compact. There are different degrees of acumination: in some vesicles it is barely visible, especially on the udder; but on the teats it is very often strongly marked.

The quantity and quality of the lymph varies, not only at different stages, but also in different parts of the same subject. It is generally more abundant

and less viscid on the teats than on the udder; more copious commonly in the cow than the heifer. In the early stage of some vesicles, chiefly those which are comparatively superficial, and often others which have been irritated, the lymph is occasionally turbid, and even bloody, without any impairment of its efficiency. In these vesicles, too, are often observed pustular or vesicated margins, analogous to those seen in the puffed irregular vesicles of adults, or the vesicles of irritable habits, either with or without local irritation. They are more apt to occur on the teats, but happen in thin skins, on the udder, from the slightest irritation. Here the cuticle appears sodden and rumpled, and is soon removed. A premature decadence of the vesicle sometimes occurs from an accidental escape of its contents; it is then covered with concrete lymph. An irregular escape of lymph will give rise to alternate decline and revival. When the escape is slight and progressive, it constitutes another form of vesicle—the vesicle with a central crust, which being liable to be mistaken for a desiccated vesicle, deserves notice. This vesicle or "vesicular tumor" assumes its characteristic form at various periods, most commonly at an early stage. It depends generally on a deep fissure in the epidermis and corium, through which the lymph slowly oozes, and concreting, exhibits a central crust. The fissure may not have completely closed before the formation of lymph: it may have re-opened during any part of that process, therefore the characteristic form may be acquired at different periods. When it exists at an early period, the dusky yellowish spot of the centre of the vesicle is

absent, its place is occupied by concrete lymph, and the vesicle commonly has more central depression, and more elevation and induration of the margin.

The crust gradually changes from an amber to a yellowish brown or black; sometimes, from an admixture of blood, it is black at an early stage. It partakes of the form of the vesicle, though sometimes it is irregular. As the vesicle enlarges, the central crust in the same ratio increases in breadth and thickness, advancing towards the circumference, and resting *upon* the epidermis until the tenth or eleventh day, when the elevated margin beginning to decline, the central crust having become darker, thicker, and larger, in all directions, often reaches its inner circle, occasionally partially overtops it, about the thirteenth or fourteenth day. The epidermis around and beneath this crust, if punctured at any part except the immediate centre, yields nothing but blood. It often has a rumpled and pustular appearance. These vesicles, and a few others scantily supplied with lymph, never acuminate.

The areola differs in colour and extent, and is often entirely absent. In thick white skins, at its acmé, it is of a pale rose-colour, and seldom, when the vesicles are distinct, more than three or four lines in diameter. In dark skins it is entirely absent, except when they are very thin: in that case it will appear as a circular line of a dull vermilion, a reddish brown, a tawny, or a coppery hue. When absent, the erythematous inflammation of the superficial, surrounding, and subjacent tissues, of which it is one of the signs, is still indicated by others, viz., heat, tenderness, and circumscribed induration. This induration

is greater where the tissues are thick and compact, though more circumscribed and better defined. Where they are thin and lax, it is less regular and more diffuse. The former is the case on the udder, the latter on the teats.

Seat of the Vesicles.—The vesicles are found principally on the teats, but are often seen on the udder, especially on the lower and naked part. They are very frequent around the base and neck of the teat, and also on the body, now and then on the apex. The number varies considerably—occasionally one or two ; not unfrequently twenty, thirty, or even sixty dispersed about the teats and udder.

Size and form of the Vesicles.—Perfect vesicles may be seen scarcely much larger than a pin's head, and not unfrequently as large as a sixpence, sometimes even larger. On the same animal they often appear as large as a vetch, a pea, a horse-bean ; the latter is a common size. In general the more numerous they are, the smaller they are. The form of the vesicles is circular or oval, now and then, in some parts, somewhat irregular ; almost invariably circular around the base and neck of the teats. The oval form is to be found on the udder, but principally on the body of the teats. Its axis seems to be determined, as well as its form, by a fissure or furrow in the skin. Where the skin is thin, vascular, and much furrowed and corrugated, which is often the case on the teats of red cows, the form is irregular, more especially when the vesicles are coalescent.

The colour of the Vesicles—This varies according to the age of the vesicle, and is again modified by

the colour and texture of the skin. At an early period, from the first to the third day, where the skin is thin and vascular and the colour fair, that of the vesicles varies from a florid red to a deep damask or purple. At a corresponding period, in thick skins of a light colour, that of the vesicles is less intense, but often bluish. In thin skins, very dark, a degree of redness is still visible, often a light damask or bright rose; but when the skin is thick and dark, the colour is more obscure. In general the vesicle is lighter in colour than the surrounding pigment; but in all cases there is presented a striking metallic glistening aspect. As the vesicles advance, the depth of their colour proportionately diminishes. It is, however, always darker at the base than on the surface, especially on the elevated border, where it is also more glistening. In the fairer skins, the glistening lustre resembles that of silver or pearl; and some vesicles, where the skin appears diaphanous, have a bluish white or pale slate colour, particularly towards their centre. In very dark thin skins, the colour of the vesicles is occasionally reddish at their base, and they have their surface much lighter than their ground, glistening with the lustre of mica or of lead. When fully developed on the light-coloured skins, the vesicles vary from a bright to a pale rose or flesh colour, which is deeper at the base, and blends softly with the varying tint of the areola, when present, or terminates in a narrow rose-coloured ring when that is absent. At this period, even in the dark reddish brown skins, the raised and tense margins of the vesicles have a rosy hue, which increases towards the base, where it terminates,

except in very thin skins, insensibly in a deep tawny hue. The bluish, bluish white, grey, or slate-coloured tint of the depressed surfaces of some vesicles is most apparent, and the metallic lustre is most conspicuous in all. But these are not all the variations of colour met with; there are others, some of which are not unfrequent. On white skins, when very thick, and at the same time much corrugated, the vesicles have a dull white or cream colour. This will also appear when some vesicles have been injured and a portion of their contents has escaped, diminishing their tension and plumpness. A recovery of tension restores their former warmth of colour and glistening aspect. On light brown thin skins, especially when the vesicles are not deeply seated, the depressed centre is of a dirty yellowish white. These and other superficial vesicles, which resemble more the human vaccine vesicle, have a tendency to become pustular on their surface, and, at their margin, often vesicate.

After the tenth day the vesicle loses its plumpness, its warmth of colour, its glistening aspect, its areola, and its indurated base, and in general, when undisturbed, rapidly subsides. Those which early exhibit the central crust, in a day or two after this period, have their centres completely occupied with its oval, or circular, or irregular form and scabrous substance. By the thirteenth or fourteenth day this crust is at its greatest magnitude, is of a brownish black colour, and adheres more or less tenaciously to the epidermis and skin beneath, and is bounded almost always by some traces of indurated margin, even at the twentieth or twenty-third day, when it separates and

leaves a smooth cicatrix, slightly depressed, of a white colour on dark skins, but often of a pale rose on lighter coloured and thin skins. The acuminated vesicles frequently spontaneously burst, are often broken, or slowly collapse, and, with others which have little or no acumination, gradually desiccate from the centre to the circumference, changing their colour, which is dull and rather paler than that of the surrounding skin, to a yellowish, yellowish brown, and black, and forming at length a thick, laminated, partly diaphanous crust, of a horny and glistening aspect, but brittle texture. The small crusts are often slightly acuminated, the larger more or less depressed in the centre, both retaining the form of the vesicle, but being, of course, less in diameter. These crusts fall about the same time as those above mentioned, leaving a similar cicatrix.

On the teats, especially about their bodies, the crusts are often large, being conjoint and often compound, two or more crusts of coalescent vesicles being directly united or intermediately connected by thin, dirty yellowish, opaque, or black irregular incrustations, left by pre-existing marginal or intervening erysipelatous vesications, which have been attended with sanguineous exudation or puriform secretion. Here the cicatrices are often deep and irregular, jagged or cruciform ; but the greater part of the ulceration in general appears to have been superficial, in the central parts of which the specific and deeper erosions of the cutis are very conspicuous. In some animals, however, where the eruption has been interfluent, and much local irritation inflicted, deep and irregular seams succeed the more profound

and protracted ulcerations. The appearance of the natural and casual disease, not unfrequently in different stages, at the same time, in the same subject, is too obvious to be overlooked by even superficial observers. Papular or tubercular elevations—papulæ, more or less advanced to the vesicular form—vesicles, more or less dimpled or depressed—vesicles, more or less acuminate, conoidal, or semi-globular—vesicles, more or less desiccated—varying in size from a mere point to eight or ten lines or more in diameter, certainly may be seen at times co-existent. Some of the causes are sufficiently obvious. No sooner is lymph produced, than by pressure in the recumbent posture, self-vaccination may occur; but a more frequent and more efficient cause are the reiterated manipulations of the milkers. These men, night and morning, in the performance of another task, unconsciously but most effectually perform on an extensive scale a very important process—a series of *re-vaccinations,* both from the infecting and infected animals. Hence many of the apparent anomalies and incongruities above alluded to. Some papulæ, appearing late, never pass into the other stages; others, of earlier date, possess some of the vesicular attributes; others, still earlier, exhibit them all, and hasten on with rapid but unequal steps to the final stage of desiccation.

A due consideration of all these phenomena and their associated circumstances would make it appear, therefore, that the disease in the cow has few if any anomalies by which it may be distinguished from the disease observed in man. The phenomena in man called supernumerary vesicles, and those pro-

duced by what has been called Bryce's test, seem as strictly analogous to those appertaining to the cow as can well be desired. It is in the supernumerary vesicles alone of man, whether eruptive or not, that we are able to trace the corresponding changes from the papular to the vesicular state.* The inoculated vesicle in him, of course, will not suffice for that purpose any more than the casual

* Eruptive supernumerary vesicles of course are not seen every day; but vesicles which exhibit their peculiar features may often be successfully sought for by those who will spare the time and trouble for the purpose of observing the phenomena alluded to. Use active liquid lymph in great abundance to every puncture, made so as to draw blood rather freely; wipe the lancet over the puncture, leaving it covered all around with lymph; take care, by attention to position, &c., that the blood shall dry over and around the wound, and thus cover the lymph. It will often happen, in young and favourable skins, that one or two supernumerary vesicles will appear at a greater or less distance from the punctures, which, in time, nearly or completely coalesce. Sometimes they will appear even two or three inches distant from the puncture, when the blood, mixed with lymph, has trickled down and dried there. Nearly the same thing may be produced by direct vaccination: insert a point, well charged only at its extremity, cautiously and deeply into a puncture, running obliquely along the skin, and let no portion of the lymph come in contact with the lips of the wound. In general the vesicle will form at a distance from the puncture and exhibit, like those just mentioned, a resemblance in miniature to the natural vaccine. These and the really eruptive supernumerary vaccine vesicles alone afford us an opportunity of observing the striking resemblance which subsists between the vaccine and human variola. Here we may see the granular elevated pimple, its ash-coloured summit, its early and obvious central depression, the gradual loss of that, and the final acumination, precisely like casual variola, from which, in anatomical structure, from the fourth to the fifth or sixth day, as shown by M. Gendrin, (*Histoire Anatomique des Inflammations, tome* 1,) the vaccine vesicle does not essentially differ. The subjects of these experiments, however, must be inspected daily from the third to the eleventh day, between which periods these and other supernumerary vesicles appear. By adopting this step in one hundred and fifty cases, I have succeeded in watching the progress of fifty such vesicles.

vesicle in the cow, palpably induced by the manual application of lymph to a visibly abraded or fissured surface. The two kinds of vesicle in the cow, it has been seen, exhibit some striking differences from the supernumerary and inoculated vesicle in man. In the supernumerary vesicle, though the tendency suddenly to acuminate does exist, as in the cow, yet it always possesses more obvious indications of the vesicular character on its surface and at its margin than is ever seen before acumination in that animal, where an indurated and more or less elevated solid substantial margin alone appears. This remark applies also to the vesicular tumor, or the vesicle with a central crust; its margin is solid, indurated, tense, and shining, but the epidermis is not raised by distended cells giving an obvious vesicular appearance as in man. The central crust of this vesicle, of course, has its analogy in man, and in him depends on a corresponding though artificial cause. It is always progressive and more obvious in the cow. The lymph in man has not that tendency to escape, in the form of a crust, from a deep puncture or accidental fissure; the containing cells, readily distending, elevate the yielding and thinner cuticle; whereas, in the cow, the lymph is slowly and scantily secreted for a time, the cuticle is thick and resisting, and an epidermic fissure affords the readiest outlet. A near approach to this tumor-like form sometimes, it is true, is found in children in particular states of the health, or in those of phlegmatic habits, otherwise healthy, with thick skins, where the vesicle, of a rose or damask hue, rises boldly and in a solid form above the level of

the skin, covered with an ash-coloured or bluish epidermis, which being punctured, like that on the cow, yields scarcely any thing but blood, even till the tenth day. In form, size, colour, &c., the analogies, exceptions, and their causes, are too obvious to need particular description.* In the irregular appearance of the eruption, hitherto, I have seen nothing essentially different from what occasionally occurs or may be induced in man, as above alluded to; and as I have never yet succeeded, after numerous attempts, to revaccinate the cow, subsequently to the development of the areola or its attendant phenomena, I shall look with suspicion and some distrust on vesicles apparently evolved after the twelfth day.

The cow, like children, and the young of other animals, particularly high-bred dogs, is subject to a purely vesicular eruption, consequent upon vaccine fever, which often bears a striking resemblance to vesicular varicella. This commonly occurs about the ninth or tenth day of the vaccine, in the form of erythemato-papular elevations of different sizes, solitary or in groups, evidently of

* In the smooth, really beautiful, and white or flesh-coloured skins of some cows, so closely resembling the plump, tense, velvet-like surface of a fine healthy infant's arm, there is often an obvious approach to similarity of colour in an advanced stage of the vesicle. The prominent circular or oval form, now and then varied by some irregularity, is evidently often connected, in the casual disease, (as in man,) with a pointed or linear opening in the epidermis. Folds, furrows, and fissures of the skin, cause irregularity in form, and stand, to a certain extent, in the place of those irregular punctures accidentally or designedly made by the vaccinator, which produce, till the ninth or tenth day, crescentic, reniform, and other fantastic shapes.

sub-epidermic origin, which, within twenty-four hours, contain a pellucid serous fluid, raising the epidermis. This fluid, being more or less imbibed by the cuticle, gives, in the white skins, an early appearance of opacity to the vesicle; in the darker skins, a yellowish brown or dirty yellowish white colour is soon apparent. On the second day the fluid is straw-coloured, and becomes speedily turbid; the cuticle collapses or bursts, turns yellowish brown, and before the fifth day the vesicles desiccate with brown and black, thin, flimsy, brittle crusts, which speedily fall. They vary in size from a mere point to that of a vetch or small pea, or are even larger, may occur on any part, but most commonly appear on parts void of hair; sometimes they arise later, and not unfrequently continue to form and desiccate for three or four weeks.

Besides this vesicular and other occasional coexistent eczematous and ecthymatous eruptions, less likely to be mistaken, it must be borne in mind that the state of the teats and udder, during and after the specific eruption, is very favourable for the generation and reception of other contagious eruptions, which are sometimes seen to occur in the same dairy. Hence it is no uncommon thing for cows which have recently passed through the former to become the subjects of the spurious pocks. In the winter of 1838–9, I witnessed this phenomenon most satisfactorily. In a dairy farm, containing several sheds, the animals in one shed, scarcely recovered from the true disease, became affected with the white vesicle, (to be hereafter figured and described,) from the introduction of an

affected cow from another shed, and several of them continued under its influence for two and three weeks longer. The character of the eruption of genuine vaccine, its seat, its cellular structure, its hard and knotty feel, its glistening aspect, its tardy and progressive change to the vesicular form, its central depression, its late acumination, afford in general broad and palpable grounds of distinction. Difficulties in the way of prompt and accurate discrimination, especially in solitary vesicles, will be better indicated and more appropriately discussed in a special account of the spurious pocks.

Recurrence of the disease.—At what period the disease may recur in the cow, and with what amount of modification, I have had no opportunity of personally observing. Here the animal is rarely kept for dairy purposes after the fourth or fifth period of calving, often not so long; and as it is not very common to notice the disease in the same dairy more than once within that time, recurrent or modified cases are not likely to be met with.*

CASUAL COW-POX IN MAN.

If reliance could be placed on the judgment of persons concerned in the management of milch cows, we should be induced to believe that the cow-pox is of very frequent occurrence in this neighbourhood; but as such persons in general decide on the existence of this disease mainly on the grounds of severity and communicability, it is impossible for others, acquainted with the eruptive diseases of cows, and therefore aware of the fallacy

* See plates i. and ii.

of such a diagnosis, without collateral evidence or personal observation, to form an accurate estimate of its absolute or relative frequency.

From my own observation, and the testimony of persons competent to judge, the disease would appear to be of more frequent occurrence, especially in the central and northern parts of the Vale, than in many other districts; but it is, doubtless, considerably more rare than other eruptive diseases of the animal, although I am aware that the fact of its occurrence may not always transpire, unless a milker need surgical assistance, or the medical enquirer be perpetually on the watch. My own observations do not extend beyond a period of nineteen years, during which time vaccination has made great progress among the peasantry, and, consequently, diminished the number of individuals likely to be the subjects of the casual disease in so severe a form as to require medical attention; yet I am inclined to believe, from all the information I have been able to procure, that the cow-pox is not so often met with here as it was forty or fifty years ago. But upon this point of course I speak with much hesitation, especially when it is seen that so much uncertainty attends all general enquiries into the subject. The lack of discrimination amongst those persons from whom we seek information is not only a formidable obstacle to successful investigation, but has been the source of serious and often fatal consequences to themselves. Contagious eruptions on the teats and udders of the milch cow, communicated to the hands of the milkers, producing considerable local irritation, and much constitutional

disturbance, often interrupting their avocations, and occasionally confining them to bed, have not only proved the source of much misinformation, but have imparted to many a confident assurance of safety from small-pox, which subsequent attacks of that disease, by leading to particular enquiries, have proved entirely unfounded. I have met with several instances of this kind, where, upon investigation, no doubt could be entertained of the delusion under which these individuals had been labouring for several years. Often, too, I have had the good fortune, by a careful enquiry, to discover many who were unconsciously exposed to the like danger, and who, by a successful and perfect vaccination, have been saved from a like fate.

Although the casual cow-pox in man is mostly found on those who have not previously gone through variola or the vaccine, it is by no means rare to meet with it on persons who have passed through the latter, and a few who have had the former disease. It is no novelty to see individuals who have taken the casual disease more than once, at various intervals, but not severely; and now we often see cases after vaccination, at periods of from two to fifteen years, of different degrees of severity, not always, but often proportioned to the time elapsed, many declaring their symptoms to be more distressing than those which they remembered of the previous vaccination.* On the other hand, we

* In estimating the degree of comparative severity in the symptoms of such cases, we ought not to overlook the influence of age. I may here also add that I have several times succeeded, with ordinary *humanized* lymph, in producing modified vesicles, with smart constitutional symptoms, on persons who, from seven to thirty years before, had had the casual cow-pox severely.

now and then meet with persons who, without any protection, have used every endeavour to acquire the disease by milking, but have failed amidst their more fortunate fellow labourers.

As in the cow, so in man, it does not appear always necessary that the skin should be visibly fissured or abraded to insure infection,* although very often we find those conditions in existence. A thin and vascular skin seems capable of absorbing lymph if copiously applied and long enough retained.

The parts upon which the disease is commonly observed are the back of the hands, particularly between the thumb and fore finger, about the flexures of the joints, and on the palmar, dorsal, and lateral aspects of the fingers. The forehead, eyebrows, nose, lips, ears, and beard, are often implicated from incautious rubbing with the hands during, or soon after milking. In women, the wrists and lower parts of the naked forearm, coming in contact with the teats, are apt to be affected. If the skin of the hands be very thin and florid, especially if chaps and fissures abound, the individual often suffers severely, having, soon after the decline of the disease, abscesses and sinuses of the subcutaneous cellular tissue, and often considerable swelling and inflammation of the absorbents and the axillary glands.

* One of my medical acquaintance in the neighbourhood, who had been engaged, four or five years ago, all the morning in vaccinating, and had wiped the lancet on his pocket handkerchief, on his return home unconsciously vaccinated his infant son on the right ala nasi, by the application of the handkerchief to this part. The child suffered severely, and bears now a large deep scar in testimony of the event.

The inflamed spots or papulæ which announce the disease are more circumscribed, better defined, harder, deeper, and more acuminate than the papulæ produced by some of the other contagious eruptions of the cow. They vary in colour from a deep rose to a dark damask or purple hue, according to the vascularity and texture of the parts affected. If the papulæ be small, there is often no perceptible central depression in the early period of their change to the vesicular state; but they exhibit an ash-coloured or bluish rather acuminated apex, which gradually becomes relatively flatter as the base enlarges and elevates, when the central depression is more obvious, and exhibits a yellowish tinge. Vesicles of this size become more or less elevated in their centre on the development of the areola, retaining their yellowish tinge. Larger vesicles, especially on the back of the hand and sides of the fingers, have a well-marked central depression in the early stage, and often a livid or irregularly ecchymosed appearance, similar to what is frequently observed on the cow; when fully developed,they present a bluish or slate-coloured hue, which increases in depth, and is more conspicuous towards their decline.* This bluish colour, though very common, is often absent, even in some of the vesicles on the same hand. It evidently depends upon and is influenced by the vascularity of the part, the greater or less translucency of the epidermis, the quantity of lymph, the depth and extent

* The plate of the casual cow-pox on the hand of Sarah Nelmes, (*Jenner's Inquiry*, 1798,) is a beautiful and faithful delineation of the disease on a fair skin.

of the vesicle. When the epidermis is stripped off from such vesicles, the zone-like adventitious membrane appears diaphanous, and has a bluish or livid hue, derived, doubtless, from the highly congested state of its vessels; here and there are often seen spots of actual ecchymosis.* Where the epidermis is thick, the vesicles are generally well defined, circular or oval, if the parts will admit, and have only a light slate-coloured tint in the centre; but more frequently this colour is superseded by an opaque white or a dusky yellowish hue. Where the skin is loose, thin, dark, or dusky, the vesicles are jagged, irregular, and puffed at their margins, and, saving the central depression, very much resemble a scald. In size they vary from that of a vetch to a fourpenny piece, sometimes larger, especially when depending on a wound or extensive fissure. The vesicles are frequently broken, or, when the epidermis is thin, spontaneously burst, causing deep sloughing of the skin and cellular tissue, and ulcerations, which slowly heal. There is often, consequently, much attendant local irritation, and considerable symptomatic fever.

Although there can be no doubt of the greater severity of the local and constitutional symptoms attending the casual cow-pox on the hands, &c., it is equally clear that these symptoms are greatly

* This hue and some of these appearances are often seen in other vesicles:—eczematous vesicles, produced by various irritants, especially tartarized antimony; the vesicles of herpes zoster, &c., at their acmé or towards their decline; apthous and other vesicles on the hands of the milkers; but in these last vesicles this colour is generally confined to the base and outer margin.

aggravated by the rupture of the vesicles on parts so vascular, tense, and sensitive, and subject to motion. There is the same variety in the period of their occurrence in this, as in the inoculated form of the disease with ordinary lymph. In some, long before much vesication is apparent, the constitutional symptoms are well marked—three or four days before the appearance of the areola; in others, they are not complained of till the areola is well developed. There is a corresponding variety also in the intensity of the symptoms which often distinguishes different ages and temperaments under ordinary vaccination. Instances are occasionally met with, (arising probably from an insufficient application of lymph, or a local or constitutional indisposition to receive the disease in the usual way,) where the vesicles are imperfectly developed, and there is little or no obvious constitutional disturbance, exhibiting a marked contrast to the local or general effects on other individuals affected at the same time from the same source. I have seen such cases followed by distinct though mild small-pox. From these occurrences, and others presently to be related, I have been accustomed to consider milkers liable to small-pox, contrary to their own expectations: first, from having been the subjects merely of the spurious diseases; secondly, from imperfect vaccination, at a late period of the disease, with *deteriorated* and purulent virus, or even with *perfect* lymph, of which they had not at the time been sufficiently susceptible.*

* See section "Primary Lymph," page 338.

In general there is no great difficulty in distinguishing the casual vaccine on the hands, &c., from other eruptions caught from the cow; but I have seen many mistakes committed by those who ought to have known better, from a hasty inspection, and a neglect in ascertaining the period of the disease. The white vesicle will, on some hands, approach very nearly to the form and appearance of the vaccine vesicle in its declining stage. On very thick skins, about the sixth or seventh day of its existence, it sometimes appears as a raised, circular, well-defined, firm vesicle, with a small violet or pink areola, and a slight central depression, with a light brown discolouration. But, on examination with the lancet, it is found neither cellular nor possessed of fluid contents; it is in a state of dessication, and has retained this appearance and its integrity so long on account of the thickness of the epidermis.

Papular, vesicular, and bullous eruptions, are occasionally seen attendant on casual cow-pox, especially in young persons of sanguine temperament and florid complexion, at the height or after the decline of the disease. They are generally of the same character as those known to attend the inoculated disease; but now and then we are told by the patients that these eruptions, either solitary or in clusters, resemble the vaccine vesicles. They seldom meet the eye of the practitioner; but occasional scars, in the situation pointed out, would induce the belief that such do sometimes occur as secondary vesicles.

PRIMARY LYMPH.

It has already been stated that to procure primary liquid lymph, in a condition fit for use, is a task of no ordinary difficulty; the most vigilant and active endeavours too frequently proving unavailing. Acuminated vesicles, containing a thin, serous, and straw-coloured fluid, and of course of little value, more commonly vesicles broken and nearly destroyed before that period has arrived, are often all that remains. Often, too, there are no crusts present or in prospect that can be depended upon. Unless the disease arises in a large dairy, and a consequent succession of cases occurs, it will seldom happen that vesicles are found capable of yielding that which is sought for. More frequently than would be suspected, the practitioner will have the mortification to find on his arrival, that, from the lateness of his information, a whole dairy of cows has passed through the disease, and he can scarcely find even a useful crust. The hands which have damaged the vesicles have also prematurely removed the crusts. Still a careful inspection of all the subjects should never be omitted; *primary* crusts should be sought for on the lower part of the udder and around the base of the teats. During this search it is not improbable that small vesicles of later formation may be found yielding efficient lymph.* A recollection of the real and apparent

* Vesicles which appear either between the commencement of the areola and its full development (from the ninth to the eleventh day), and which, in many instances, as in man, would appear to depend on the scanty or imperfect application of lymph to the mouths of the absorbents; or, still more rarely, and needing a careful inspection, vesicles of secondary formation arising after the twelfth day, and during the period of strictly vesicular desiccation. Vide page 328.

anomalies of the eruption, and a little experience, will detect other resources which might be overlooked or disregarded.

The best lymph is to be obtained from perfect vesicles before the period of acumination ; after this period it is less to be depended on, particularly if very abundant, thin, or discoloured. Taken immediately before acumination, it is quite as active as that of an earlier date. In the earlier period, from the fifth to the ninth days, it is often scarcely possible to obtain it in any quantity except the skin of the part be very thin and lax. Lymph from a vesicle which has not acuminated, even if turbid, should not be rejected ; it will often succeed when limpid lymph from an acuminated vesicle will fail. Acuminated vesicles which have been broken are rarely to be relied on ; and vesicles which have been broken at an earlier period are not much better, and, on account of their liability to afford more than the specific secretion, may prove highly objectionable to some individuals. Entire unacuminated vesicles, or vesicles with central crusts, should be sought for where they are least exposed to injury, viz., on the lower and naked parts of the udder, and the adjoining bases of the teats ; but as there is some difficulty in obtaining lymph in sufficient quantity from these sources, the greatest care and circumspection is necessary. It is impossible to exercise too much delicacy in the proceeding. It is scantily secreted, as before stated ; the exudation of blood will obscure, and the sensitiveness of the animal under a rough manipulation sometimes altogether prevent, the process. The puncture should be made

with a sharp lancet as near the centre of the vesicle as possible, and the epidermis be gently raised to a moderate extent around the discoloured or most depressed part. Slight pressure, either with the blade of the instrument or between the thumb and finger, if done with tenderness, will enable the operator, after some time, to charge a few points with the slowly exuding lymph. Patience and a treble charging of the points are always to be recommended. From what has been stated in another place, it will be understood that the puncture at the elevated and indurated margin of the vesicle will be perfectly useless, as it yields only blood; it may be pernicious by irritating the animal.

Vesicles with central crusts will be found perhaps more convenient, and nearly as productive as those just mentioned, particularly if the crust be small, and the margin of the vesicle tender, hot, and tumid. The crust may be wholly removed or pressed on one side, the epidermis underneath may then be carefully raised if the lymph does not soon exude, and a perfectly limpid fluid, in small quantity, can thus be procured.*

When we are, as too often happens, deprived of the above advantages, we may yet succeed in procuring useful substitutes for liquid lymph in— first, amorphous masses of concrete lymph; secondly, central irregular crusts; thirdly, vesicular crusts or desiccated vesicles. The first are often found upon or in close proximity to broken vesicles; and are either colourless, like crystals of white

* Small superficial vesicles are often more yielding than contiguous larger vesicles more deeply seated.

sugar candy, or of a light amber colour, resembling fragments of barley sugar, according to the period of their escape, and the length of time they have been exposed to the air. With a few drops of cold water they may be reduced again to the liquid state, and employed with a probability of success. The central rough and irregular crusts, often more or less conical, occasionally contain an admixture of blood or some discolouring secretion or other adventitious superficial coating: the more transparent and the nearer a dark brown the better. Desiccated vesicles should be carefully abstracted by the milker before they are casually removed or spontaneously fall, and those only of primary formation, the model of a vesicle, dark brown and somewhat translucent, should be retained.* Secondary and tertiary crusts are of scarcely any value: these are more or less thin, ill-defined, or irregular in form, of a dirty yellow or yellowish brown, more transparent though not unfrequently more dusky and opaque, containing a large admixture of concrete blood and pus.

Good crusts, treated in the manner first suggested by Mr. Bryce for human vaccine crusts,† may as frequently be depended on, in suitable subjects, as liquid lymph, and more frequently than much of that which is commonly met with. After all, however, where there is often so little choice, we must not be too fastidious as collectors, nor rely too confidently, as experience proves, on the precepts deduced and the expectations formed

* See page 324.

† *Practical Observations on the Inoculation of the Cow-pox*, by James Bryce, F.R.S., &c. Edinburgh, 1809.

from the use of the humanized vaccine. It will frequently happen that much of the lymph taken in confident assurance of success, will, from causes presently to be alluded to, prove utterly unavailing in propagating the disease in man; and, on the other hand, some that is taken from necessity, and in despair, will be followed by unexpected and complete success. With the exception before mentioned, in reference to broken or irritated vesicles, disappointment from failure is all that results from the use of late lymph; and the best lymph, it will shortly appear, will not always avert such an occurrence.

VACCINATION OF MAN WITH PRIMARY LYMPH.

The rarity of the natural cow-pox, the difficulty of obtaining information of its existence, even in the very neighbourhood where it arises, the mischief so often done to the vesicles by the milkers, and the advanced stage of the disease before inspection, preclude the frequent *practice* of vaccination with primary lymph, if it were necessary or desirable. But there are also formidable obstacles to the *success* of the process, even when primary lymph is obtained in all its purity. These impediments to successful vaccination seem to arise from two causes: first, the natural difficulty with which animals of one class receive a morbid poison generated in animals of another class; and secondly, deficiency or imperfection in the mode of communication. Although it is admitted that man more readily receives some of the morbid poisons of the lower animals than they

receive his, yet it would appear that even in him there are various degrees of susceptibility, and that some individuals seem altogether insusceptible under ordinary circumstances. This certainly may be asserted with respect to primary and imperfectly assimilated vaccine lymph, at least by the usual mode of transmission. The following facts, which have often fallen under my own observation, and which have been repeatedly witnessed by many of my medical acquaintance, seem to me to justify these conclusions.

1. More than half my attempts to vaccinate with primary lymph, taken from vesicles at a proper stage, and possessing all the characteristics of perfection, have entirely failed. The same individuals have immediately afterwards been successfully vaccinated with dry or liquid lymph which had been long current in man.

2. A small number, vaccinated from the same primary sources, afforded results in various degrees of imperfection. In general, the seventh or eighth day has elapsed before any indications of infection have appeared: a dark red pimple has slowly advanced, and gradually assumed a tubercular or tuberculo-vesicular form,* being either perfectly lymphless, or a dark red tubercle on the thirteenth or fourteenth day with a scanty supply of lymph on its acuminated summit, with a moderate areola, slowly subsiding, attended by very trifling or scarcely appreciable constitutional symptoms. Nearly all these subjects have been successfully re-vaccinated with

* Similar to those of earlier formation and more rapid progress, which often follow re-vaccination.

ordinary lymph, from periods of nine to eleven months, in different degrees of modification, but always with a nearer approach to perfection.

3. A still smaller number, vaccinated from the same primary stocks, have furnished vesicles in the highest degree of beauty and perfection. But even in many of these there has been more or less delay in the full development of the vesicles; and in nearly all, the number of the vesicles has seldom equalled one-half of the punctures.

4. Precisely similar phenomena of entire failure, imperfect, or complete vaccination, with all their attendant circumstances, have followed the use of lymph from perfect casual vesicles on the hands of the milkers; and the like results have frequently attended the early removes of lymph from the most perfect primary vaccinations.

5. The whole of these phenomena—abortive punctures, tubercles, tubercular vesicles, imperfectly developed, and perfectly normal vesicles—may be frequently seen co-existent on the same individuals, either from primary lymph, casual lymph, or the early removes of both from any given vesicle.

6. Although, with the few exceptions previously stated,* the copious, repeated, and long-continued casual application of cow-pock lymph to a highly sensitive, vascular, mobile, and extended surface, with or without abrasions, chaps, or fissures of the cuticle during the process of milking, proves a more perfect and successful mode of communicating the disease, yet it is abundantly obvious that even this superior mode is in general more prompt and certain

* Pages 333 and 336.

in infecting the cow than the milker.* Other facts, which will presently appear, and some that will be related in the next section, might here be adduced if it were necessary, but it is expedient to pass on to the consideration of the particular phenomena of primary vaccination.

Whether vaccination with primary lymph—lymph direct from the cow—be successful or not, I have always observed that the puncture which receives it exhibits on the next day a remarkable and unusual degree of redness, more or less intense and diffused according to the habit of body and the condition of skin of the recipient. It resembles the prompt inflammatory blush often attendant on re-vaccination, the vivid redness which marks the haste of spurious vesicles, or still more nearly that early indication of effect so well known as the unwelcome harbinger of what has been called the "irritable vesicle," which ordinary lymph will often produce in strumous or erysipelatous habits, with light and fair complexions, thin and florid irritable skins, and a flimsy cuticle incapable of concealing the network of plethoric capillaries beneath, and where the smallest puncture produces a torrent of blood, and the mildest lymph proves a destructive poison. This early and vivid blush, which follows the insertion of primary lymph, gradually declines on the third or fourth day, and, where the vaccination fails, soon entirely disappears. When successful, and the vesicle is normal or nearly so in its progress, the redness becomes more and more concentrated, and at length blends with the red elevation of the vaccine pimple.

* Vide Casual Cow-pox and Vaccination of the Cow.

But there is often an interval of longer or shorter duration between the decline of the blush and the commencement of the first stage of the disease, papulation being sometimes postponed to the sixth, seventh, eighth, ninth, or even tenth day. Hence there is much irregularity in the period of full development of the vesicles, and the areola is frequently not complete till the eleventh, twelfth, thirteenth, fourteenth, or even sixteenth day. About this stage of the areola, especially on children, small supernumerary vaccine vesicles in miniature often appear within its limits, sometimes on the shoulder, and still more rarely on the face and body. The well-known papular, vesicular, and bullous eruptions, occurring in such subjects are frequently observed. The colour and extent of the areola vary of course in different subjects, being very florid and extensive in the sanguine and irritable, pale and limited in the leucophlegmatic and apathetic; but at its height, and about the decline, there is considerable induration of the surrounding integuments in all, influenced by the same circumstances certainly, but manifestly existing to a greater degree than is observed in corresponding temperaments from ordinary lymph. The areola, under these circumstances, *declines and revives,* continuing to exhibit a brick-red or purplish hue while the hardness remains, indicative of deep seated inflammation in the corium and subjacent cellular tissue.

The process of desiccation, even in perfectly normal vesicles, is generally protracted. Although not quite so late in the thick clear skins of infants and some young children, even here it will be seen for

some days confined to the centre, while the circular margin remains of a dull or dirty yellowish white or pale horn colour, retaining a fluid to the sixteenth or eighteenth day. When the regular vesicle is neither ruptured nor spontaneously bursts, the crust is often retained to the end of the fourth or fifth week, bringing away with it a circle of the corium, often the whole depth of it, and some of the subjacent cellular tissue, leaving a deep foveolated red cicatrix, or a yellow foul excavation, which ultimately furnishes the pink, shining, puckered aspect of a small-pox scar. But it too often happens, especially in subjects with thin and vascular skins, that the vesicles burst or are easily broken during the height or about the decline of the areola; and if the subject be of a strumous or erysipelatous diathesis, of full habit, and possess an irritable skin, secondary inflammation is set up and becomes more diffused and deeper seated, the corium is destroyed completely, and a slough of the subjacent tissue is soon manifest, the surrounding integuments are deeply indurated, often a multitude of ecthymatous pustules are formed on the enlarged papillæ and on other parts of the skin, and abscesses in the cellular membrane and axillary glands ensue, causing proportionate constitutional irritation. When the slough separates, the wound often has the appearance of a caustic issue, seeming capable of receiving a small marble. All this mischief, however, generally soon subsides: the ulcers speedily clean, throw up luxuriant granulations, needing repression; the surrounding irregularly and superficially denuded skin soon heals, and an unexpectedly small circular or

oval, red, shining, puckered, elevated, and uneven cicatrix succeeds.

Character of the vesicles, and other effects of the lymph.—Vesicles produced by primary lymph, like those from good ordinary lymph, are not only subject to all the well-known modifying contingencies of temperament, habit of body, quality and condition of skin, form and extent of puncture; but their character, as might be expected from what has been stated, is subject to still further variety from special qualities in the lymph itself. These qualities are not equally manifest in all subjects. The vesicles very often exhibit a bluish, ecchymosed, or livid appearance, not only at their commencement in thin skins with an active circulation, but are more than usually blue towards their decline where such conditions are absent. Yet this effect cannot be produced in all cases. Although the vesicles are often remarkably large and finely developed, yet they are commonly not more so than others produced by ordinary lymph, and could not be distinguished from them but by the circumstances above stated, when describing the extent and depth of skin affected. They are not unfrequently less fine and much less developed than other vesicles, but they admit of very remarkable improvement by transmission of the lymph through a series of well selected subjects. By this process, also, in a very short time, most of the defects and some of the evils connected with the use of primary lymph may be dissipated, and the lymph rendered milder and more suited to general purposes.

In attempting this, it will be recollected that

it is quite possible to lose the stock unless a large number of suitable subjects are at hand. Children are the best certainly for the purpose, and such should be selected as possess a thick, smooth, clear skin, and have a dark complexion, and are not too florid; but still plump, active, and healthy. Infants of this description are decidedly the best; their vesicles, we know, are almost always better defined, less liable to burst or be broken, have less areola, and, in fact, if between four and nine months old, are capable of furnishing with this lymph all that can be desired, with the least amount of risk. By a steady and judicious selection of these and similar subjects, in a few (even three or four) removes, the severity of the local mischief becomes manifestly materially diminished, the vesicles acquire a magnitude and beauty often greatly superior to what is daily witnessed, and, in a short time, the lymph may be transferred with safety to others, even more sanguine and robust, where, it is well known, lymph, if good for any thing, will produce the finest and most perfect vesicles.

Three or four punctures, according to the size, age, and habit of the patient, when the lymph is thus thoroughly assimilated, will in general be amply sufficient; a less number will be safer for some subjects.

Too much care, however, cannot be taken at all times to avoid rupture of the vesicles, or what might and does otherwise pass off with moderate inflammation and the erosion of about half the texture of the corium, leaving a magnificent well-

excavated scar behind, will most certainly lead to great inconvenience, and probably to all the mischief formerly described as resulting from the first remove. As we advance we find the necessity of preparing the most objectionable subjects, and the advantage of subjecting many of them to the same preliminary treatment which the best and most expert inoculators of small-pox formerly so successfully adopted for their patients; for it is a long time before some individuals can be safely vaccinated with this active lymph, even though taken from the mildest vesicle.*

In the succeeding removes, among a diversity of subjects, there is of course endless variety in the character of the vesicles. They are meagre, ordinary, or equally fine as before, some bold and elevated, with rounded margins, turgid with lymph, or, having narrow acute margins and broad centres, yielding as abundantly, thick and fleshy, or flat and level with the skin, affording scarcely any lymph on the eighth day,† without the least abatement of any needful activity; while every now and then we have all the characters of the earlier removes, and all the inconvenience of primary lymph. It is quite allowable to admire, and perfectly right to endeavour to produce, beautiful vesicles; but we must admit our failures in such

* I have seen too much evil result from a neglect of such salutary precautions, and have several times positively refused to vaccinate, with very active lymph, certain subjects with the obnoxious characteristics, mistaken for health, till they have been reduced to propriety. There are a few such who for a long time must be avoided—*cane et pejus angue.*

† But in these and other vesicles the lymph is abundant on the tenth and eleventh day, perfectly limpid and quite efficient.

attempts while relying on lymph alone: the soil is of as much importance as the seed. Lymph from the smallest vesicles, if normal, will, in a good subject, furnish in its turn the finest vesicles, and *vice versâ*. We are constantly reminded, too, that the finest vesicles often exist where there are the least indications of constitutional disturbance, and that remarkable intensity of symptoms is seen where the vesicles are strikingly small.

In using primary lymph and its early removes, however we may be disposed to attribute to it the power of aggravating the constitutional symptoms in certain temperaments well known to be obnoxious to them, yet we are also forcibly reminded that the very same lymph will appear to produce scarcely any appreciable symptom in others. Roseola, lichen, &c., with vomiting, diarrhœa, delirium, &c., arise in some, while in others mere acceleration of pulse is observed without complaint. In many instances the symptoms appear as early as the fifth day, on the sixth and seventh very often, with morning remissions and evening exacerbations, terminating on the ninth, or augmenting till the height of the areola. In other instances they are not manifest till the eighth or ninth day, sometimes later; occasionally they are scarcely observable. In some subjects a single vesicle will be attended with earlier, more severe, and longer protracted symptoms than four or six will produce in others.

Although the greater part of my experiments with primary lymph and its early removes have exhibited the above as its qualities and accidents, I think it not improbable that primary lymph may vary in

these respects, and be modified by season and other circumstances, both individual and local. In passing through a large number of cows, it has appeared to me generally milder in the latest than in the first subjects, and I have certainly succeeded in effecting a mitigation by artificial means while in the prosecution of experiments with another view. As I shall have to recur to this subject, and to a detail of the effects of other kinds of lymph, I think it better to proceed at once to a narrative of the experiments themselves.

VACCINATION OF THE COW WITH PRIMARY LYMPH.

Never having observed or heard of the occurrence of cow-pox, in this neighbourhood, in any other than milch cows, I was desirous of ascertaining the degree of susceptibility of the sturk (or young heifer) to the disease, and its attendant phenomena, when artificially induced by primary lymph. I commenced, therefore, by vaccinating some of these animals, about ten months old, in the inside of the ear, on the teats, and in the soft and vascular structure on and near the vulva, with lymph taken from milch cows in the winter of 1838–9, while the disease was prevalent in many of our dairies. Punctures were made in the ordinary way with lancets well charged and with points thoroughly imbued with good lymph; two or three of the latter were broken off short, and allowed to remain in each wound. Although I could not boast of the almost unvarying success which attends the casual vaccina-

tion of the milkers,* yet I found much less difficulty in succeeding than I had supposed, or than is experienced in vaccinating these animals with lymph taken from man. Though the punctures in general were early inflamed—on the second day—the papular stage was not well marked, and appeared postponed, the vesicles were normal, but declining on the eleventh day. On the teats there was much tumefaction of the integuments until the thirteenth day. On the parts near the vulva the vesicles, though declining on the eleventh, occasionally revived and declined for two or three days, as they often do in the natural and casual forms. When the crusts fell spontaneously at the proper time, a moderately deep smooth scar was observed; but if prematurely removed, a deep erosion of the skin ensued. On the inside of the ear the vesicles appeared less developed, though the lymph was reproductive. No indisposition in the animals was noticed beyond a slight acceleration of the pulse. The lymph used in the above experiments was from the same source and of the same date as some which had been applied to children and adults. On these last, however, it either failed altogether, produced more or less imperfect vesicles, or perfect vesicles with the areola not fully developed till the twelfth, thirteenth, or fourteenth, and fifteenth or sixteenth days. The

* These men, without knowing it, are unquestionably the most successful vaccinators with primary lymph, and the most careful too, for they never neglect Bryce's test. We cannot fail to be vexed at their destructive proceedings, and impatient of their general lack of discrimination; but we must stop to admire the splendid success of their performances, which it would be well if we could imitate. They may indeed smile at our puny efforts!

lymph resulting from these vaccinations of the cow, taken on the tenth day, and transferred to man, differed in no respect from that which has been described,* except that the inflammation and induration at the base of the vesicles were certainly less considerable, and the subsequent scars rather less deep, but remarkably well defined, and even now appear to have extended through two-thirds of the substance of the corium. I could not spare subjects to carry on this lymph.

VACCINATION OF THE COW WITH HUMANIZED LYMPH, OR RETRO-VACCINATION.

My experiments in retro-vaccination were almost entirely confined to the sturk under twelve months old; and the parts selected for the operation were those in close proximity to the vulva. These animals were easily procured, while milch cows in any number, at least here, are difficult to obtain for such a purpose. The parts chosen are most easy of access, and in every respect, I think, most desirable.† The operation was performed either with a lancet or a sharp straight bistoury. The lymph was either dry, or liquid in capillary tubes. No other precautions were taken than excluding the animals from wet and cold immediately after the operation for a few hours or perhaps a night. Those of a light colour and with thin skins were generally preferred, but often without avail, scarcely

* Pages 343 and 344.

† The scrotum of the male sturk (young bull) would answer very well; indeed, on the continent, I learn that it is very often thus appropriated.

one-half of the operations succeeding. Tubercles, nearly or completely lymphless, were often produced; but sometimes every puncture succeeded. In the majority of instances the vesicles ran the normal course, declining on the eleventh day. Four kinds of lymph were at different periods employed, each having been current in man for a longer or shorter period. But a detail of some of these experiments will best explain some interesting particulars elicited in their progress.

Retro-vaccination with lymph which had been several years in use.—It appeared sufficiently active, and from arm to arm was attended with satisfactory results. *Subject:* a small ill-conditioned sturk, strawberry coloured, thin skin. Seven punctures were made near the vulva, and eight points inserted recently charged with fifth-day lymph from a fine child on the 1st of February, 1839.

Second day: Nothing remarkable.

Fourth day: Some of the lower punctures rather red.

Fifth day: Scarcely any traces of punctures left.

Sixth day: Punctures appear perfectly passive.

Seventh day: Two punctures rather elevated and inflamed.

Ninth day: All the punctures raised in the normal form, but in different degrees, the vaccine tumors being of different sizes; tried to procure lymph, but failed, both on the surface of the tumid margins, which yielded only blood, and in the centres, where there is a slight crust.

Tenth day: There are four fine large and three small vesicles, from two of which were charged one hundred points, abundantly, with clear adhesive

lymph, some of which was used on the same and subsequent days. The punctures made yesterday had given rise to the exudation of lymph which is now visible in the form of light amber-coloured concretions on the parts.

Eleventh day: The vesicles appear diminishing, and amber-coloured lymphatic concretions are formed in their centres. *Vespere:* Crusts enlarging; vesicles subsiding.

Twelfth day: Upper vesicles have a pustular appearance in places; others have a yellowish brown crust; others flattening.

Thirteenth day: All subsiding; crusts larger.

Fourteenth day: Subsiding

Fifteenth day: Crusts more elevated; margins flatter.

Sixteenth day: Declining.

Seventeenth day: Intumescent ring nearly disappeared; black crusts alone remaining.

Eighteenth day: Every thing diminishing.

Nineteenth day: Small elevations in the site of the vesicles, still lighter than the ground.

Twentieth and twenty-second days: Some crusts prematurely removed by accident; others spontaneously fell on the twenty-second and twenty-third days, leaving small pale rose-coloured smooth scars, slightly depressed, in the centre.*

February twenty-sixth: Inoculated with liquid small-pox lymph (variola discreta, seventh day,) in five punctures, from capillary tubes, on right side of labium pudendi, the wounds being at the same time deluged with fluid.

* See plates iii., iv., and v., Retro-vaccination.

Third day: Slight tumidity around the punctures.

Fourth day: A shining glassy tumidity around the punctures, which are larger.

Fifth day: In *statu quo*.

Seventh day: All subsiding; no result.

March 12th: Re-inoculated with dry sixth-day confluent small-pox lymph, inside and outside the left labium pudendi, with several points; four punctures. Re-vaccinated with seventh-day "variola vaccine" lymph,* two removes, inside and outside of the right labium pudendi; several points; four punctures. No result from either.

Experiment second.—June 6th, 1839: Retro-vaccination with lymph which had been in use at the Small-pox and Vaccination Hospital since March, 1837. It was then introduced by Mr. Marson, the resident surgeon, from casual vaccine vesicles on the hands and arms of a dairy woman, to the ultimate exclusion of the old lymph, whose declining activity Dr. Gregory had long noticed, and has clearly pointed out.† *Subject:* a young sturk, colour strawberry, skin thick; lymph used from points and tubes; punctures four, deep, near the anus and vulva.

Third day: All the punctures closed with a plug of adhesive or "modelling" lymph, but all tender.

Fifth day: Three of the punctures tumid and tender, filled with a black plug.

Seventh day: One very fine vesicle near the anus, on a dark fleshy ground, with a thin central crust; two smaller vesicles below. Charged twelve points

* Vide Variolation of the Cow.

† *Medical Gazette*, February 24, 1838.

with great difficulty, used some the same day, and sent others to the Small-pox and Vaccination Hospital.

Eighth day: Large vesicle glistening, but a little flattened from the loss of lymph; centre filled with a hard crust, which was removed; appearance bloody and raw, and no more lymph could be procured. The smaller elevations do not appear to increase.

Ninth day: Large vesicle increased in size, is plump and glistening, hot and tender; centre depressed and filled with dark central crust, which has everted edges. The other two scarcely altered.

Tenth day: Vesicle arrived at its maximum of development, and remarkably fine. The smaller ones are abortive, or lymphless tubercles.

Eleventh day: Evidently flatter; black central crust has its centre depressed; tubercles flatter.

Twelfth day: Vesicle much flatter, with projecting crust.

Fourteenth day: Intumescence nearly gone, crust remaining; very small crusts in the two smaller supposed tubercles, proving that they did furnish some lymph.

Twentieth day: A small crust still remaining on the site of the large vesicle; nothing visible on the others.

Twenty-third day: A very small smooth scar visible on a dark ground, from the large vesicle only.*

Twenty-sixth day: *Re-vaccinated* in four punctures, eight points, and two tubes charged with

* Vide plates vi. and vii.

eight-day retro-vaccine lymph.—Fifth day: slight tumefaction of the edges of the punctures; three wounds, raw; one closed. Failed.

Experiment third.—July 9th, 1839: Retro-vaccination with points charged with "variola-vaccine" lymph, nineteenth remove. *Subject:* a young sturk, colour red and white, skin dusky and thin; punctures four, very superficial, and not deeper than was necessary to hold the points, as in ordinary vaccination, inserted near the vulva.

Second day: Inserted four more points of the same lymph in the four wounds of yesterday.

Third day: Punctures closed with plugs, rather inflamed.

Fifth day: Punctures rather tumid; three plugs removed; four small vesicles resembling the vaccine in man, three reddish, flesh coloured, and glistening, on a dusky ground; centres depressed.

Sixth day: The four vesicles rather more enlarged, more distinctly vesicular, of a bluish colour, two upper more elevated, two lower flatter, but all glistening with a bluish tint blended with a pale rose near the base.

Seventh day: Vesicles contain more fluid, look bluer, have a pale lead colour, irregularly blistered, very little raised, centre slightly depressed, base reddish flesh colour; charged three points with turbid opaque fluid.

Eighth day: All four vesicles broken, have been slightly rubbed, and the blue cuticle rather rumpled; no hardness of the base; no elevation; no fluid to-day; no central crust.

Ninth and tenth day: No induration at the base; no central crust.

Eleventh day: Vesicles have a thin brownish crust, and fragments of lead-coloured cuticle, but no marginal induration.*

August 1st: Re-vaccinated in four punctures with "variola-vaccine" lymph, twenty-one removes. Slight scars of the previous vaccination visible. No result.

Experiment fourth.—July 13th, 1839: Retro-vaccination with retro-vaccine lymph, obtained from the second experiment, and from that, the fifth remove. *Subject:* a young sturk; skin dark, not very thick; colour red and white; punctures four, very superficial, as the last, near the vulva.

Fourth day: No apparent effect; re-vaccinated by opening the closed punctures and inserting four more points charged with the same lymph.

Tenth day, (22nd July): Four vesicles at their acmé, with slight central depression, and slight annular red areola; no central crusts; colour of the vesicles, dirty yellowish white. Charged eight points with a turbid fluid.

Fifteenth day: Nothing apparent but four small crusts the size of a small vetch, brownish black, depressed in their centres; slight redness around one of them.

Twenty-third day: Small scars visible.† Re-vaccinated carefully on the 10th of August. No result.

Remarks.—The subject of the first experiment had been in very poor condition a short time before, but the effects of my improved diet at the time of the

* Vide plate viii., figure i.

† Vide plate viii., figure ii.

operation had become visible, and the enlargement of the cysts of the Æstrus bovis, (or warbles as they are often called,) abounding under the integuments on either side of the spine, evinced a favourable change in the condition of the animal. Though I am not able to state the precise age of the lymph employed in this experiment, I have every reason to believe that it had been current for several years. It was mild, certainly, but sufficiently active, and could be depended on to produce the ordinary local and constitutional effects, from arm to arm, rarely failing to yield a vesicle for every puncture, particularly when taken on the fifth or sixth day, which it very commonly might be, a practice I was then pursuing with a belief in its advantages. Hence it was used at that period on this animal. Beyond a slight acceleration of the pulse, no perceptible change in the animal's health was noticed. Considerable topical tenderness and heat were unequivocally manifest.

In vaccinating the cow with primary lymph, it will often happen, as in this case, that the resulting vesicles appear suddenly to assume their characteristic form, without passing through a palpable and progressive stage of papulation, as if they had *forgotten* to rise ; they are apt thus to be despaired of by the vaccinator. Similar phenomena, it will be recollected, are noticed in the description of the natural and casual disease. Analogous occurrences, from various causes, we know, take place in man, especially in using primary retro-vaccine and unassimilated lymph. The difficulty of obtaining lymph till the tenth day, which occurred in this

case, is not uncommon when the vesicle is deeply seated in the corium; but tenth-day lymph from such vesicles, as before stated, is as good as that of an earlier date; it certainly succeeds as well, sometimes better, the points being more fully charged. Though the vesicle appeared so late, it still commenced its decline on the evening of the eleventh day; the lymph, instead of raising the cuticle, as in man, at the margin of the vesicle especially, or acuminating in the centre, as it often does in the natural and casual disease, under different topical circumstances, was slowly discharged upon the epidermis through fissures made in vaccinating and abstracting, and thus formed a central crust.* Slight pustulation is sometimes observed on the margins of vaccine vesicles, even without accidental irritation.

The lymph, taken on points thoroughly and trebly charged, and immediately used, produced perfect vesicles. The papular stage, however, was late—the sixth or seventh day; but the areola was complete on the tenth, and declined on the evening of the eleventh or twelfth day. It was employed on subjects of different ages, and, with this exception, and some vesicles being rather smaller, the local and constitutional effects did not differ materially from those resulting from its former use. The slight change which it had undergone in its transit through the cow was not apparent after the third remove, when it appeared to possess no more than its former qualities. The object of the subsequent variolation and vaccination are sufficiently manifest: both entirely failed.

* See Natural and Casual Cow-pox.

The subject of the second experiment possessed a much thicker and darker skin than that of No. 1. Similar experiments with this lymph on subjects apparently more eligible had failed, and even in this case, although liquid lymph from tubes, as well as points recently charged, was used, but one good vesicle arose out of four punctures, yielding a very small quantity of lymph ; the other vesicles were ill-developed, and presented only, on their decline, slight and ambiguous traces of lymphatic exudation.

In man, the lymph employed for this experiment was prompt and effective, possessing the desired "maximum of vaccine intensity," as those who have used it or seen its effects at the Hospital can testify. In this subject, too, the papular stage was short, but lymph was obtained much earlier than in the former experiment, though the quantity was very small, and none could be readily procured after the seventh day. This lymph, transferred to eligible subjects, produced vesicles in various degrees of perfection. The areola was not at the height till the twelfth or thirteenth day, papulation not appearing till the fifth or sixth day ; but by the third remove it acquired its former power, and its use was followed by vesicles of the greatest perfection and beauty. The same results attended the employment of the charged points forwarded to the Small-pox and Vaccination Hospital ; and when I observed there the vesicles of many subsequent removes, I was incapable of distinguishing them and their effects from those produced by the parent lymph. The lymph had gained nothing by the transit ; it could

not be improved. Imperfectly developed vesicles, such as appeared in this retro-vaccination, are not unfrequently observed; the presence, though late, of concrete lymph in the centre is the only means of judging of their character; tumors, tender, circumscribed, and glistening, are frequently produced, and slowly subside without this indubitable sign. The course of the vesicle here was perfectly normal, and it affords a good specimen of a vaccine vesicle on a thick dark skin, yielding, as usual, very little lymph. This animal was not only re-vaccinated, on the subsidence of the disease, without effect, but was tested on the seventh day with its own lymph, and also with small-pox lymph, but with doubtful results in both cases, there being merely glistening, well-defined, but equivocal lymphless tubercles in both sets of punctures.

In the subject of the third experiment the skin was very thin and of a singularly dusky colour. The punctures were designedly made as superficial as in ordinary vaccination with points, for the purpose of producing a variety in the character of the vesicle. The lymph was little more than four months old, but had failed in previous attempts at retro-vaccination on other subjects apparently equally favourable. The punctures were again opened on the second day by the thumb and finger, in near imitation of the re-infecting process of the milker. The first operation it appears was successful. Lymph, in very small quantity, was obtained on the sixth day immediately under the epidermis, which, however, was not raised. There was never much secreted, and the vesicles did not

exhibit the induration and marginal elevation, &c., which other vesicles do when implanted deeply in the corium. The lymph was not used, but would have been available, though a little turbid. Very minute crusts subsequently adhered to the centres of the vesicles; the scars were slight, smooth, and superficial. This animal was re-vaccinated with liquid lymph, and inoculated with small-pox lymph twice before the eighth day, with the production only of tender and reddish elevations around the punctures, but not affording unequivocal appearances of the formation of lymph. Re-vaccination after the decline of the disease had no result.

In the fourth experiment the skin was thicker than in the preceding subject; the lymph scarcely more than one month old. The punctures were made as in that case, with the same object, and with the same result,—the production of a vesicle more nearly approaching in character the human vaccine. The effects were as prompt and as regular as in the former case, and on the tenth day a scanty supply of rather turbid lymph was obtained. In the first removes the vesicles were postponed a day or two, or diminished, but on the third had acquired their former perfection. This animal, also, was inoculated and re-vaccinated before the sixth and seventh days without any satisfactory result from either sets of punctures.

GENERAL OBSERVATIONS.

These experiments are neither intended nor calculated to illustrate the best mode of vaccinating or

retro-vaccinating the cow. The method here used was adopted, as before stated, more for its convenience than from any belief in its superiority. Other plans of procedure, doubtless, there are, better calculated to ensure a greater measure of success. Nevertheless, it does appear that many individuals are affected with difficulty, or are altogether insusceptible by the ordinary known modes of vaccination. Even those persons who profess to have "discovered, after a long series of experiments, a mode of perpetuating the natural cow-pox at will,"* confess that a selection of subjects must be made. Probably much of the difficulty attending the operation, and impeding or preventing its success, depends upon the condition of the tissues as natural to the subject, or as induced by season or circumstances. Whether with points or with tubes, some subjects are promptly affected; while others, in every respect, to all appearance, not less eligible, require a repetition of the process, and then yield but a small number of vesicles for a large number of punctures. The difficulty and uncertainty of the operation, by our usual defective means, are still further manifest by the apparent failure and doubtful effects of Bryce's test, employed in two of these experiments, as well as in others. I have made incisions into the cellular tissue and inserted crusts of natural cow-pox; the wound has healed without any result. The above experiments, however, will serve to show the greater difficulty of vaccinating the cow with humanized than with primary lymph, and that, when successful, a much milder disease is the

* Vide *Lancet*, June 29th, 1839.

result. Take an abundance of humanized lymph from one of the finest and most productive vesicles ever seen, and if you succeed in retro-vaccinating the cow, you may perhaps be able to charge scantily only a very few points from a vesicle which excites but trifling topical inconvenience. Vaccine lymph, it is obvious, therefore, in passing from the cow to man, undergoes a change, which renders it less acceptable and less energetic, on being returned, to many individuals of the class producing it; some refuse it altogether. But this reluctance or absolute refusal, this difficult imbibition or total insusceptibility, does not exist to the same extent as observed in the converse of this experiment, viz., in passing primary lymph from the cow to man by the same means. Here we have considerable difficulty; but when we succeed, a severer disease is induced. These experiments clearly show that the *age* of humanized lymph does not seem to influence its reception by the cow. Provided that the lymph be of ordinary activity, and possess the normal qualities, it is as likely to succeed in its operation on the animal whether it may have been current in man a few weeks or many years, and will excite equally perfect and productive vesicles. The effects of retro-vaccine lymph on man, as compared with primary and current lymph, are worthy of notice. Lymph which had passed from arm to arm with the greatest promptness and facility, and produced the finest effects, in its first removes from the costive vesicle of the retro-vaccinated cow, is not so readily absorbed by many individuals. It rarely fails; but papulation is retarded, and though the vesicle may

attain maturity at the normal average period, the completion of that stage is frequently postponed. The vesicles are often smaller, and the disease really not so well developed, as by the stock from which it was derived. But these changes do not appear after the second or third remove. The lymph is restored to its former qualities, and produces its former effects. Some of the retro-vaccine lymph of the second experiment, transmitted to the Small-pox and Vaccination Hospital, from whence it was originally derived, was passed through a long series of subjects, under the inspection of Dr. Gregory and Mr. Marson, who, though better able to make the comparison, were unable to detect any sensible difference in its local or constitutional effects after the second remove. On the third remove it became "very fine," as it was before its transit through the cow.*

Is the practice of retro-vaccination of any real value as a means of renovating humanized vaccine? I confess, that from my limited experience, (these few observations and experiments,) I am unable to discover its advantages, or to admit more than its questionable utility, from one transit through the cow. What humanized vaccine might acquire by repeated and indefinite transmissions, I am not prepared to say. From what has been observed above, I have no doubt that primary vaccine, passed by artificial means through a series of cows, would lose much of its acrimony, and produce on man a

* I cannot allow this opportunity to pass without an expression of my obligations to Dr. Gregory and Mr. Marson for their great kindness, civility, and attention at all times, and for much valuable assistance afforded me on many occasions.

milder but abundantly active and characteristic disease; but that humanized vaccine, by a similar process, should ever acquire all the attributes of primary vaccine, or become so much more *brutalized* as to deserve the epithet of "renewed," is more than many are prepared to expect. Few persons, I apprehend, are likely to succeed in conducting such experiments; and being of doubtful utility, in the estimation of many, the difficulty, trouble, and expense necessarily attending them, will, in all probability, long operate to the exclusion of positive proof. But it has been stated by those who doubt the advantage of a single transmission through the cow of lymph which had passed through many individuals, who may be variously affected with the germs of scrofula, &c.,* that where primary cow-pock is not met with, and the vaccine hitherto in use shows a falling off in its essential properties, "retro-vaccination is advisable." But if vaccine lymph, at any time, and under any circumstances, shall have lost its *essential properties,* surely the chances of a successful, much less a useful, retro-vaccination of the cow are very few. It is highly probable that by a proper selection of the animal, and an experienced choice of topical and other advantages, pretty uniform success may be obtained with the use of ordinary lymph; but when we see the effects of the very best and most recently humanized lymph on parts of the animal not ill adapted to the operation, it seems reasonable to fear that lymph deprived of its "essential properties" is not likely to prove

* *British and Foreign Medical Review;* Dr. Prinz; January, 1840, page 85.

a very manageable agent. This, in fact, is practically admitted by the best and most successful retro-vaccinators, who select the lymph for their operations from "well-developed vaccine vesicles.* But, from facts which will shortly appear, although the practicability of the operation may not be disproved, its utility may be still further questioned.

Before quitting this subject, I may be permitted to make a few brief remarks on the following question. Is vaccine lymph, in passing through many individuals with all due care and selection, susceptible, in process of time, of actual degeneration or essential diminution of intensity? Without speculating on the asserted immutability, under ordinary circumstances, of the essential properties of any known morbid poison, which seems to me not quite so easily maintained, or entering into a discussion as to the safety or propriety of implicit reliance on the analogy instituted between a virus of human and one of brute origin, I shall content myself with a reference to facts. In warm climates it is well known that actual and speedy degeneration does take place. In India, at Silhet, we are told by Mr. Brown, in a highly interesting paper on the regeneration of the vaccine,† "that in the course of three or four months the lymph gradually changes to a thin purulent looking fluid, of a dirty white colour at first, and afterwards more resembling thin pus of an unhealthy character. Vaccination from such sources puts on the appearance of the pustular

* *British and Foreign Medical Review*, January, 1840, page 85.

† *Quarterly Journal of the Calcutta Medical and Physical Society.* April 19, 1837, No. ii.

variety of imperfect and irregular vaccine noticed by Bateman—premature formation with much itching: the constitutional influence about the eighth day is rather less in this than the regular vaccine, and it is necessary of course to discontinue the practice from such degenerate virus." In other places these changes occur at different periods. Now is it unreasonable to enquire whether, in other climates, under the influence of occasional intemperature of season, slight changes may not take place, from time to time, which may ultimately lead to actual though less palpable alteration in some of the qualities and properties of vaccine lymph? Without presuming to assert that this is the *cause*, it seems impossible to deny the *occurrence* of the fact in temperate climates. M. Bousquet, whose zeal, ability, and experience in the practice of vaccination are well known and justly appreciated, in a very interesting and satisfactory memoir on the subject,* in comparing the vaccine of 1836 with that from which it was derived in 1800, by the aid of a coloured engraving, clearly shows a positive diminution of intensity, and explicitly states that the course is changed:—"*Aujourd'hui la pustule vaccinale n'est jamais plus belle, plus apparente qu'au septième jour, mais cet état ne dure pas; à peine est-elle entrée dans le huitième jour, qu'elle jaunit et le vaccin se trouble; dès le lendemain, la desiccation commence au centre et elle marche si rapidement que la croûte, réduite à la grosseur d'une lentille, tombe du quinzième au dix-huitième jour.*" An accompanying engraving illustrates this perspicuous description,

* *Notice sur le Cow-pox decouvert à Passy, &c. &c.*, 1836.

and contrasts the character and stages of the lymph in question with some new vaccine, found at Passy that year, which had then passed through scarcely twenty-five removes, and which M. Bousquet considers threatened with the like fate. Dr. Gregory* had observed that the vaccine lymph which had been in use at the hospital for a long period was of "diminished intensity—eight or ten punctures produced not more irritation than the three to which he had been accustomed fifteen years before." New lymph from a different source was introduced by Mr. Marson, and was found to be far more intense and active than the old. Three or four punctures were now amply sufficient; and Dr. Gregory, assured of the superior quality of the new lymph, discontinued, eventually, the old, and concludes his report by the expression of a belief that vaccine lymph, passed through the bodies of many persons, loses, in process of time, some essential portion of its activity. It is worthy of remark that the conclusions both of M. Bousquet† and Dr. Gregory are contrary to former belief.‡ Mr. Estlin, whose success in obtaining, and whose kindness and laudable diligence in diffusing, a new and active lymph are well known, and properly estimated,§ states that in his opinion the alterations in the vaccine affection consist in—first, the smallness of the vesicle and its attendant areola; secondly, its rapid course; thirdly, the absence of constitutional disturbance;

* Report on Small-pox, &c. &c., *Medical Gazette*, February 24th, 1838, page 860, No. xxii.

† *Traité de la Vaccine. Par M. J. B. Bousquet.* Paris, 1833; p. 217.

‡ *Cylopædia of Practical Medicine.* Article, Vaccination; page 413.

§ *Medical Gazette*, September 15, 1833, No. li.

fourthly, the small quantity of lymph yielded by the vesicle; and, fifthly, especially the diminished activity of its infecting quality. At the Vaccine Institution at Glasgow, and by many competent persons in this country and on the continent, similar opinions are entertained; though all do not, therefore, conclude that the vaccine, *pro tanto,* has lost its protecting property. On the other hand, persons of high authority and large experience can see no diminution of the needful activity of the present vaccine, and assert that it possesses all the exterior qualities and characters which new lymph exhibits. In a description of the variolous epidemic of 1829, in Turin, Griva* gives an account of a few of his own experiments with primary lymph, and analogous observations of many distinguished persons who had favoured him with a detail of theirs, and asserts that he could see no difference, at that time, in the course and operation of the ordinary humanized and the primary vaccine. That the vaccine has undergone no essential change in its protective property is maintained in the Report of the National Vaccine Establishment,† and the fact stated that lymph thirty-eight years old, obtained from Dr. Jenner, had manifested its peculiar influence in all the numerous subjects, in descent, through which it had passed. Many others contend that Jenner was correct in his belief of the improbability of future supplies from the cow becoming necessary.

* *In tutti questi sperimenti era impossibile rintracciare una qualche differenza dal corso del vaccino cosè detto umanizato.—Epidemia Vajuolosa del* 1829, *in Torino; aggiuntivi I. Lavori Vaccinici, per T. D. Griva. Torino,* 1831.

† *Medical Gazette,* May 19, 1838, p. 348.

Jenner remarks, "Whether the nature of the virus will undergo any change from being further removed from its original source in passing successively from one person to another, *time alone can determine.* That which I am now employing has been in use nearly eight months, and not the least change is perceptible in its mode of action, either locally or constitutionally. There is, therefore, every reason to expect that its effect will remain unaltered, and that we shall not be under the necessity of seeking fresh supplies from the cow."*

Let us enquire, therefore, of Jenner himself, what was *then* the local and constitutional action of the vaccine. "The constitutional symptoms," says he, "which appear during the presence of the sore, while it assumes the character of a pustule (vesicle) only, are felt but in a very trifling degree."† Two cases, in illustration, are detailed,—one vaccinated with primary lymph, the other from the second remove,—perfectly characteristic of the mildness of the constitutional *primary* symptoms, and not less so of the severity of the *secondary,* derived from the local, wide and deep spreading ulceration. The latter he was solicitous to prevent by local applications, caustic, &c.,‡ remarking, emphatically, that the indisposition which was most sensibly felt "*does not arise primarily from the*

* *Continuation of Facts and Observations on the Variolæ Vaccinæ,* 1800. page 162.

† *Further Enquiry,* page 99.

‡ M. Bousquet (*Traité de la Vaccine,*) has gone much farther, and shown that the vesicle may be destroyed with caustic, at an earlier period, without interrupting the constitutional influence.

action of the virus on the constitution, but that it often comes on, if the pustule (vesicle) is left to chance, as a secondary disease." Analogy, Jenner's constant guide, here directed his judgment and determined his practice.* Further observations convinced him of the correctness of this conclusion; and that a single vesicle was adequate to the production of the anti-variolous effect. Repeated vaccinations also taught him that his solicitude concerning the local irritation was unnecessary, and that, ultimately, the mildest remedies were rarely required, the acrimony of the virus having been subdued.† Jenner's description of the constitutional and local effects of the vaccine, with the accompanying illustrations, may therefore be confidently appealed to as a standard by which we may and ought to compare those of the present day. He rarely failed in communicating the disease from arm to arm; and dried lymph, he asserts, would prove effective at the end of three months.

From an early period, struck with the fidelity of Jenner's description, and always having recognized his distinction of the primary and secondary symptoms, I have looked upon the local affection, which is so much under the influence of temperament, tissue, &c., as of inferior importance, provided it did not materially differ from the average mild and normal character indicated by him. Where symptoms of constitutional affection are so mild, and often scarcely

* He remarks that confluent small-pox did not more effectually prevent a recurrence than the mildest small-pox.—*Further Enquiry*, page 122.

† *Continuation of Facts*, page 177, 1800.

to be recognized, as in the vaccine,* of course it is necessary to have exterior local indications of the desired influence. It behoves us, therefore, to adhere as nearly as possible to the model furnished and recommended by the great discoverer of the vaccine and the inventor of vaccination. My own repeated applications to the cow have been chiefly for the purpose of experiment, for the satisfaction of patients, or the accommodation of friends, not from any belief in its superior protective efficacy over active humanized lymph. But when lymph is found uniformly deficient in infecting property, vesicles abnormally rapid in their course, at their greatest development on the seventh day, yellowish in appearance on the eighth with turbid lymph, central desiccation on the ninth, and a miserably small crust falling on the fifteenth or eighteenth day, common prudence dictates its discontinuance, and urges the adoption of a new supply, although constitutional symptoms may not be absent, for *weak* lymph may not be better than *late* lymph. There surely, in so delicate and important an affair, must be more satisfaction in using that which will affect promptly and certainly, produce a vesicle in its greatest beauty on the tenth or eleventh day,† which will then and even later contain a limpid and often an effective lymph, and desiccate not completely till the fourteenth or fifteenth‡ day. Such we know was the vaccine of 1800.

* Where no complaint is made or is otherwise indicated by the patient, I have very frequently found an acceleration of the pulse mark the silent but sure progress of the disease.

† As in the acuminated natural or casual vaccine vesicle.

‡ Very active lymph will require sixteen or seventeen days for complete desiccation. See page 347.

AFFINITY OF COW-POX AND SMALL-POX.

Neither the protective nor the modifying power of the vaccine, its co-existence with variola in the same individual, the striking resemblance in the form and structure of the two vesicles at a given period, nor its occasional occurrence as a secondary eruption,* had satisfied me of their common origin. So marvellous a modification of so disgusting, malignant, and contagious a disease as variola, by the medium of the cow, and its conversion into a beautiful, benignant, and non-contagious affection, which it preserved when transmitted to man, did appear to me to require positive proof to be admitted with satisfaction. The announcement of Dr. Sonderland's experiments interested and astonished me, I confess, and I regretted the existence of impediments in the way of their repetition, but cherished the hope that other trials would be made to corroborate the fact. I was particularly struck with his seventh aphorism :† "It is now clear why, in recent times, cow-pox has been seldom or never seen in the cow; for the cow-pox of the cow arises merely from infection by the variolous exhalations from men recently affected with small-pox, and

* *Medical and Physical Journal*, vol. ii., page 402, (the Rev. Mr. Holt's cases;) and vol. ix., page 309, (Dr. Adams's cases;) also Dr. Adams on *Vaccine Inoculation*. A young lady, a member of a family resident here, was vaccinated in infancy, fourteen years ago; during the desiccation of the vesicles a secondary eruption of perfect vaccine vesicles appeared on the face and trunk, about twenty in number, and went through the regular course, leaving characteristic scars; four or five on the face, which I saw a few days since, attest the fact. A few similar cases will be presently related.

† *Medical Gazette*, November 9th, 1831, vol. i., No. v., page 162.

coming in contact with the cow. As epidemics of small-pox have been rare during the last thirty years, cows could seldom be exposed to infection, and have, therefore, seldom exhibited the disease." I resolved, therefore, to enquire into the validity of the two propositions contained in this aphorism, viz., the origin of cow-pox from man, and the rarity of the disease of late years, doubting the correctness of the former from my own previous observations. The result of careful and extensive enquiry induced the belief that the asserted comparative rarity of the disease was true as regarded this neighbourhood. From similar enquiries, made on every suitable opportunity, among the proprietors of cattle, of individuals who had had the casual cow-pox, and from my own personal observations when the disease has arisen, I have collected the following facts :—

The cow-pox has occurred : First, during epidemic small-pox, but when no cases of variola have been known in the neighbourhood : secondly, when variola has been prevalent in neighbouring towns : thirdly, when variola has been in contiguous villages : fourthly, when in the same village (perhaps a solitary case) in which the affected farm was situate : but, fifthly, I have never succeeded in tracing positive or probable intercourse of convalescents from small-pox, their friends or attendants, with a dairy or its occupants, except in one instance, in the autumn of 1838, during which time, and the early part of the following year, cow-pox was prevalent, and in this case it can scarcely be supposed to have had any influence ; the milker had carried a child some miles labouring under modified small-

pox: (I merely relate these facts,* leaving others to draw their own conclusions, adding, what I have before stated, that although occasionally I have suspected the occurrence of cow-pox in more than one individual in a dairy at a time, it is generally observed to appear first on a single cow, and spread by contact:) and lastly, that it is often seen in a single farm, but not unfrequently in several at the same period.†

VARIOLATION OF THE COW.

Nothing but direct experiments seemed capable of determining the point at issue; but unfortunately there were many difficulties in the way of performing

* In the course of my enquiries I have heard many strange and unaccountable tales. I cannot forbear relating the following:—A resident in this town has repeatedly assured me that when a lad, more than forty years ago, he, with several others, assisted in holding a milch cow, while the late Mr. Allsop, of Watlington, (Oxon,) inoculated it with small-pox matter in the teats and udder, at a farm called Standals, about seven miles from that place. That the whole herd subsequently had the cow-pox thus produced; he caught it from them, as well as other milkers, and great numbers of people around were vaccinated on the occasion, the small-pox being then prevalent and fatal. He understood the operation on the cow was done to render the small-pox milder; and assures me that a copious but small vesicular eruption on the body followed his casual vaccination on the hands. The matter was taken, for the cow's inoculation, on the point of a lancet out of a small bottle. Mr. Allsop is dead, and I am unable to procure further particulars. I vaccinated this man: he had one *modified* vesicle, which left no permanent scar. A milker, detailing the particulars of the outbreak of cow-pox in a herd, when he caught it, more than thirty years ago, assured me that his employer had men to sit up and watch nightly during a fortnight, to detect, if possible, the approach of the d——d doctor, (in search of lymph,) whom he suspected of having inoculated the cows with small-pox! his suspicions arising out of the facts that the disease was on no other farm, and the small-pox was very bad in the adjoining towns.

† Vide page 300.

them satisfactorily. I expected only negative results, and therefore considered it proper not to attempt any experiments except under a concurrence of the most favourable circumstances. These were not to be met with at any time; and arrangements for the purpose, made in the spring of 1836, were set aside for want of a sufficient number of eligible subjects. Under a more satisfactory concurrence of events, in August, 1838, I commenced some experiments, with a view to ascertain the possibility of infecting the cow with variola, after the manner of Dr. Sonderland.* I invested two milch cows and one heifer, all in calf, with the sheets and blankets of a small-pox patient. The sheets and blankets had been used for a deceased patient, and were removed from the same bed where lay another patient under confluent small-pox of the twelfth day. The two milch cows were shut up in their shed for three days and nights, and afterwards for three days more, but let out at night. During their confinement they perspired freely from the warmth of the covering. The heifer was placed under an open shed during a week. I could discover no indisposition, nor find any eruption on any part of them. A fortnight afterwards all these animals were inoculated with small-pox virus of the fifth and ninth day, on glasses, by the lancet and by seton, in the ear, the udder, and the teat, but without any apparent result. On examining the setons inserted into the udder, *three months* afterwards, they were found *firmly adherent to the parts into which they were inserted, and as passive as if they had been passed through leather.*

* *Medical Gazette*, Nov. 9, 1831, vol. i., No. v., page 162.

This fact afforded a tolerably correct notion of what might be expected from the tissues of such animals; but they were subsequently *vaccinated* with points, setons, and the lancet, on the teats, udder, and back, with recently-taken eighth-day lymph. No result.

One was subsequently re-vaccinated with liquid lymph of the seventh day, *two removes from the cow* which had furnished it. No result.

One of these animals was, some time subsequently, *reinvested* with blankets from the bed of a small-pox patient of the ninth day. No result.

Such inconclusive results could not be otherwise than unsatisfactory. This, to me, at least, did not appear to be a land of promise, but a *terra incognita*, enveloped in clouds and abounding in mists, and where retreat was as difficult as advance was discouraging. Reflecting, however, on the experiments of M. Viborg, of Copenhagen,* on other animals, the statements of Dr. Sonderland, and the varied results of similar experiments by Dr. Numann, of Utrecht,† and those said to have been performed in Egypt;‡ but considering more especially the strong presumptive evidence advanced by Dr. Baron,§ that variola had been common to men and brutes, and the not unfrequent occurrence of malignant vaccine, if not of actual varioloid disease, in the cows of Bengal,‖ I resolved to persevere; and

* *Medical and Physical Journal*, vol. viii., page 271.

† *Johnson's Medico-Chirurgical Review*, Jan., 1834, page 208.

‡ *London Medical Gazette*, vol. i., page 673.

§ *Life and Correspondence of Jenner*, vol i.

‖ *Ibid*, vol. i. and ii.; also *Quarterly Journal of the Calcutta Medical and Physical Society*, No. ii., April 19, 1837.

accordingly subjected several sturks (young heifers) to variolous inoculation. The following are the details of one of the series of experiments, and their results :—

February 1st, 1839 : Inoculated three sturks with small-pox virus, (variola discreta,) seventh or eighth day, on large points—the teeth of a comb—charged twelve hours previously. Sturks about ten months old.

Experiment, first.—Red and white sturk, thin skin, gentle, well bred :—Made seven punctures, and introduced fourteen points, charged half their length, near the left side of the vulva and below it. Inserted two setons, charged with small-pox virus from the same subject, at the same time.

Fifth day : Two or three of the punctures tumid, all closed with brown plugs ; setons tumid.

Sixth day : Some punctures tumid.

Seventh day : Less tumid.

Eighth day : Still less so ; setons passive, dry, adherent.

Ninth day : No material alteration, and therefore *vaccinated* on the *right side* of the vulva, in seven punctures, with fifth, sixth, and seven-day lymph, on fourteen points, from a young child ; and *below* the vulva, in four punctures, with eight points.

Tenth day of variolation, second of vaccination : Some of the variolated punctures hard and elevated ; but *one*, near the margin of the vulva, has assumed the form and appearance of the vaccine vesicle ; it is nearly circular, has an elevated margin, and a small crust in the depressed centre. By gently

removing the central irregular crust, and carefully puncturing the cuticle from under which this appears to have exuded, lymph was obtained, and thirty-eight points were scantily charged in the course of an hour. Vaccinated punctures on the right side, rather red and elevated.

Eleventh day of variolation, third day of vaccination: The circular indurated intumescence, forming the margin of the vesicle, somewhat flattened and diminished. Vaccine punctures more red, larger, and more elevated. *Evening:* more crust in the centre of the small-pox vesicle; margin less elevated. Vaccine vesicles advancing.

Twelfth day of variolation, fourth day of vaccination: Margin of the small-pox vesicle more elevated and red; central crust darker; two of the other variolous punctures more tumid, but without lymph, still merely tubercular. Vaccinated punctures more tumid and inflamed.

Thirteenth day of variolation, fifth day of vaccination: Small-pox vesicles more inflamed, nearly as florid as the mucous membrane of the vulva, which has lately assumed a bright rose colour. Every puncture made for the vaccine lymph (five days since) effectual, vesicles of different forms and sizes being now apparent. Charged some points from them.

Fourteenth day of variolation, sixth of vaccination: Small-pox vesicle has less marginal induration, seems flatter, and crust partially loosened. Vaccine vesicles, some partly subsiding, some a little pustular, others still red, and all surrounded by indurated borders.

Fifteenth day of variolation, seventh of vaccination: Small-pox vesicle enlarging; crust larger; indurated elevated margin of the vesicle quite circular, red, and glistening towards the centre. Vaccine vesicles larger and more elevated. Took from them more lymph.

Sixteenth day of variolation, eighth of vaccination: Small-pox vesicle diminished; crust increased and loosening. Vaccine vesicles also diminished, some rather pustular; crusts brown and pale yellow, some crusts abraded partially, others loose.

Seventeenth day of variolation, ninth of vaccination: Small-pox vesicle has scarcely any redness on its border; crust remaining. Vaccine vesicles diminishing, and covered with blackish brown crusts within their circular or oval margins, which are much flattened.

Eighteenth day of variolation, tenth of vaccination: Small-pox vesicle very much flattened. Vaccine vesicles equally so, covered with black crusts of different sizes.

Twenty-fifth day of variolation, seventeenth of vaccination: Scar of small-pox vesicle apparent; it is deep, wrinkled, and of a pale rose colour. Scars of the vaccine vesicles differ only in being smaller, less deep, and have more induration around them.

March 12th: Re-inoculated with small-pox virus (confluent) of fifth and sixth day, in three punctures, several points, in the labium pudendi. Re-vaccinated in three punctures, several points, with sixth or seventh-day retro-vaccine lymph, second remove. The next and three or four subsequent days the punctures were somewhat tumid, but soon again subsided. No result.

Experiment second.—White sturk, thin skin. February 1st: Inoculated in seven punctures, near the left side of the vulva and on the under fold of the labium of that side, with fourteen points, charged, as in the Experiment, No. 1, from the same source; and with two setons, charged in like manner, near and below the vulva.

Third day: Incisions tumid, encrusted.

Fourth day: Less tumidity, less crust.

Fifth day: Incisions appear healed; two or three more tumid than the rest.

Sixth day: Some incisions more tumid.

Seventh day: Less tumidity.

Eighth day: Still tumid, but not advancing.

Tenth day: Seem lymphless tubercles.

Eleventh day: Tubercles less elevated; setons passive.

February 15th: Re-inoculated with small-pox virus of the seventh and eighth day (variola discreta) on the left side of the vulva and under fold thereof, as before, and near the verge of the anus. Virus liquid, some pellucid, some opaque and puriform, in capillary tubes, was forced into eight punctures, which were deluged with it; the punctures being afterwards irritated with points deeply charged with the same, which were suffered to remain in the punctures.

Third day: Nothing remarkable.

Fifth day: Four upper punctures near the verge of the anus, enlarged and elevated; four on the under fold of the labium, elevated and red, but less enlarged.

Sixth day: All present the appearance of the

vaccine vesicle. The four upper are larger, but seem only tubercular; four lower, on the under fold of the labium, have a deep damask hue, and appear like oval or circular solid elevated rings, with central depressions; from one of these took clear lymph with much difficulty, and scantily charged thirty-nine points.

Seventh day: Upper tubercles seem diminishing, lower vesicles seem flatter, but broader.

Eighth day: Four upper appear still tubercular, of a lighter colour than their ground; four lower vesicles rather augmented, have a light damask hue. Took lymph again from one of them; the other three, not readily yielding lymph on a careful puncturing, were not further disturbed, from a desire to witness their progress; slight central crusts.

Ninth day: The four vesicles enlarging; again opened the inner margin under the daily increasing central crust of the vesicle first opened, and charged twenty points; tubercles diminishing.

Tenth day: One of the tubercles rather larger; four lower vesicles increasing. Charged twenty-seven points. Vesicles have a bluish, reddish, glistening appearance; two of them rather red at the base; one or two rather raw on each side.

Eleventh day: Brown crusts cover the centre of the vesicles, which appear declining.

Twelfth day: Declining, with increasing crusts of a blackish brown colour, within a slightly elevated margin. *Vaccinated* in several punctures on the margin of the right labium with many points, well charged with sixth-day retro-vaccine lymph; two removes. Punctures slightly tumid for a day or two, but quickly subsided. No result.

March 12th: Four scars, as large as peas, in the situation of the four vesicles, depressed, pale rose colour. *Re-inoculated* with small-pox virus, (confluent,) fifth day, in four punctures, on inside of left labium. *Re-vaccinated* in three punctures, many points, of fifth and seventh-day lymph from a child. No result.

Experiment third.—February 1st: Sturk, dark red and white; thick coarse skin. Inoculated in seven punctures, fourteen points, on the right side of the vulva, and beneath it, in the same manner and from the same source as No. 2. Two setons, charged with small-pox virus, inserted still lower.

Third day: Punctures tumid.

Fourth day: Incisions closed with dark brown plug.

Fifth day: Tumid.

Sixth day: Several punctures tumid.

Seventh day: Less so.

Eighth day: Appear subsiding.

Ninth day: Only one or two small tubercles, and they are perfectly lymphless.

Tenth day: Diminishing in all respects; setons passive.

February 15th: Re-inoculated with small-pox virus of the seventh and eighth day (variola discreta), on the left side and under part of labium and verge of anus, with liquid virus, some pellucid, some opaque and puriform, from capillary tubes, and with points deeply charged with the same, taken twelve hours previously, in eight punctures, which were deluged with the variolous fluid, and afterwards irritated with the points which were allowed, when shortened, to remain in the wounds.

Third day: Two or three punctures a little tumid.

Fourth day: Some rather hard and elevated.

Seventh day: One puncture rather more tumid, about the size of a vetch.

Eighth day: Three or four tubercles rather larger.

Ninth day: One (the largest) tubercle seems pustular, the others appear subsiding.

I considered this a failure, and of course did not use the pustular product of the tubercle.

This animal was vaccinated in December last, with two other sturks, with primary lymph, but without any other result than that just described. The vaccination of the others succeeded.

Remarks.—In the experiments for the purpose of infecting the cow, those animals were selected which, from their age and the appearance of their teats, had not, in all *probability*, been the subjects of the vaccine disease; they were all under four years. I could not detect any eruption by a careful inspection of those parts of the body where it was most likely to have appeared; yet I cannot affirm that none existed in parts thickly covered with hair. All I can say is, that eruptions, consequent upon fever, are most commonly observed on parts of the animal void of or thinly covered with hair, viz., the teats and udder, as in the vaccine, the apices, chiefly, of the teats, the interdigital membrane, the skin over the coronet, of the feet, the mucous membrane of the mouth, gums, and tongue, as in the aphtha epizootica,* except in the malignant ex-

* Since the writing of this paper commenced this disease has been very prevalent here; and from the kindness of many of my friends, and especially of Mr. Lepper, our active, intelligent, and zealous veterinary surgeon, I have had numerous opportunities of watching the disease in all its interesting forms.

anthemata, where any part of the surface may be affected, when the hair of course falls off on recovery. I have seen, on one occasion, both haunches of a milch cow covered with a multitude of the white blisters, which are apt to form on the teats and udder; but such an occurrence, at least in this neighbourhood, is exceedingly rare. It appears to me, therefore, from the absence of any fever in the animals in question, and the freedom of the parts above mentioned from any eruption, that we may fairly suppose that none occurred. I took no precaution to shave any hair from the back, which it appears was done in one, at least, of M. Numann's cases,* the reason for which I cannot understand. On the contrary, I took every precaution to prevent the infected blankets from coming in contact with the naked or thinly covered skin, my object being to *infect*. Hence portions of the blankets were suspended round the necks of the animals, and hung up near them, so that the variolous effluvium had every chance of being inspired. The uncertainty of these experiments, therefore, seems manifest; and the same may be said of the others, for I failed to succeed in *vaccinating* the same animals—a circumstance which at once prohibits our drawing any other inference.

The experiments by inoculation, from their importance, need a few remarks. The animals employed for the purpose were not those which I should have chosen if circumstances had permitted proper selection; but the difficulty of obtaining a *number* of milch cows upon which to operate, and

* *Johnson's Medico-Chirurgical Review*, January, 1834, page 209.

conveniently inspect, is almost insuperable in a neighbourhood where these animals are so valuable. Few persons will permit operations which have a tendency to make milch cows irritable, much less such operations as these; and the importance of the operation requires careful and daily inspection. I decided, therefore, that there was no alternative but to subject the best I could obtain to the process of inoculation, in that manner and on those parts which I had ascertained would sometimes favour vaccination. There was an inducement also, of no trifling importance to the employing of these animals, that I was able to keep them on my own premises, and an advantage in selecting the parts, in their superior accessibility to operation, facility of daily inspection, and tolerable freedom from injury. Yet I was fully aware of the loss of those advantages which the teats and udders of milch cows were capable of affording. The animals were much out of condition when they came under my care, but were beginning to improve when subjected to experiment.

The uncertainty attending similar experiments, and the importance of their results, were sufficient inducements to the adoption of every precaution calculated to avoid error and remove all possible doubt and misgiving; accordingly I took the small-pox virus myself, in the presence of my assistant, Mr. Taylor, on points that never could have been used before, for they were the teeth of a large comb cut for the purpose, and charged new capillary tubes for the second experiment. The performance and progress of these experiments, as well as others

of a similar nature, were witnessed by Mr. William Vores, house surgeon of the Bucks Infirmary; Mr. Charles Vores, his pupil; Mr. Henry Lepper, veterinary surgeon, and his assistant; my colleagues at the Infirmary, Mr. Henry Hayward, and Mr. James Henry Ceely; and my assistant, Mr. Taylor, who aided me in taking the virus.* The subjects from which the virus was taken were healthy young men, the pocks were remarkably fine, large, plump, and numerous; but at no time were either of the patients considered in danger. In using the points just described, I thought I obtained another advantage in having them large and capable of holding much virus, for they were doubly charged above half their length, cut in two, and allowed to remain where they were inserted, the punctures being made with a straight bistoury or a large lancet.

In the first experiment, during the first five or six days, there seemed some chance of a result in the tumefaction of the punctures; but on the ninth day, as this result seemed very unlikely, I decided on an endeavour to ascertain the susceptibility of the subject to the vaccine, and, therefore, inserted the vaccine points. The next day,† to my great surprise, that which I considered an inert tubercle had assumed the form of a vaccine vesicle, and some of the other tubercular elevations had increased in size; the vaccine punctures, too, all looked red. The lymph obtained from the vesicle

* To all these gentlemen I am much indebted for valuable assistance, on many occasions, in the conduct of these and other experiments, especially to Mr. W. Vores, who has for a long time been my most zealous and untiring assistant in these pursuits.

† Vide plate ix.

was perfectly limpid, and it so slowly exuded that much time was spent in charging a few points. On the following day* it appeared that the abstraction of lymph had diminished the energy of the vesicle; it looked flatter, duller, and smaller in size, as if declining, yet the vaccine punctures were evidently advancing. On the next day, twelfth of variolation,† the vesicle had acquired more than its former size, and looked in a most vigorous condition, with all its characters augmented; there seemed some promise, too, of some of the other variolous punctures advancing; two below the vulva were certainly larger. The vaccine punctures (fourth day of vaccination,) were evidently forming, almost vesicular. On the thirteenth day nothing could exceed the interest of the scene. The highly vigorous state of the variolous vesicle—tense, florid, and glistening with a silvery hue from the tension of the epidermis,‡ and the palpably vesicular state of the vaccine punctures, were, I need not say, very gratifying. Having before seen the temporary injury done to the variolous vesicle by the abstraction of lymph, I had not the courage to touch it again, being desirous to avoid interrupting its progress; besides, I had already enough lymph, and had inserted it into the arms of some children, whom I was daily watching with much anxiety. I took, however, some lymph from the vaccine vesicles (their fifth day). Here was Bryce's test on the cow! Variola on one side in vigour, tested by vaccine on the other, hastening to

* Vide plate x.
† Vide plate xi.
‡ Vide plate xii.

declare the fact of constitutional affection. The variolous tubercles made no advance. On the fourteenth day all the vesicles seemed diminished in activity and plumpness, owing to an escape of lymph, partly from injury, partly from the use of the lancet to the vaccine vesicles. On the fifteenth day* all again in an active state. The variolous vesicle was truly splendid, and had acquired a magnitude greater than what the natural vaccine vesicle is apt often to attain, and an ample crust filled the centre. This was the period of greatest development of all the vesicles; the fifteenth day of variolation, and seventh of vaccination It will appear, therefore, from this and the next experiment, that the variolous vesicle was retarded in its development several days; instead of reaching its acmé on the tenth, as the vaccine vesicle does, it was the fifteenth. It was this tardy rising which induced me to give up all expectation on the ninth day, and vaccinate on the other side of the vulva: a happy mistake! On the sixteenth day decline in all was manifest, which was too palpable on the seventeenth to be doubted.† The scar of the variolous vesicle was rubbed off prematurely, but it was deeper than is usually seen on the udder of the cow, and the surface rather more uneven; the scars of the vaccine vesicles were less of course, nothing remarkable, but, like the scars attending Bryce's test-vesicles in man, exhibited induration and elevation of their margins much longer than the principal vesicle. Re-inoculation and re-vaccination were performed for obvious reasons. The effect of the

* Vide plate xiii.

† Vide plate xiv.

lymph from the variolous vesicle, which will be detailed presently, was the production of the true vaccine. The lymph from the vaccine vesicles, taken on the fifth and seventh days of vaccination, the thirteenth and fifteenth of variolation, produced remarkably active vaccine vesicles on children. The differences require to be specially described.

In the second experiment (the first attempt) there was much promise, but no result. This I have several times met with; but re-inoculation has not been attended with the successful effects which ensued in this case. It was performed in *part* in a situation where the skin seemed thin and bled freely on puncture. On the fifth day* the purplish or livid pimples, so much like the natural or casual vaccine on the thin skin of the teats, at this stage announced the success of the operation *on* the lip of the vulva, and I certainly thought all the other punctures had succeeded on the thicker skin *near* the vulva; the want of colour in these elevations was attributed to the texture of the skin there. On the sixth day† every thing advancing, but the larger and colourless elevations seemed without lymph; the four glistening vesicles had a slight central crust, clearly announcing their character. Lymph was procured from one, with great difficulty, perfectly pellucid and adhesive. The seventh day the tubercular character of the four upper elevations quite manifest; they were *subsiding without a central crust;* the four vesicles had increased in breadth, and were less elevated. On the eighth day‡ lymph

* Vide plate xv.
† Vide plate xvi.
‡ Vide plate xvii.

was again taken from a vesicle which yielded it more readily than others; and, anxious not to interrupt their development, they were not again touched. All the vesicles were of a glassy resplendency; the tubercles were evidently passive. On the ninth day* more lymph, perfectly pellucid, very scanty, was taken, the vesicles clearly advancing. On the tenth day, the day of maximum development of the vesicles, a slight areola round one of them; all had a very active appearance, and the lymph taken was perfectly limpid and quite as adhesive as before.† The decline of the vesicles on the eleventh day was perfectly obvious, and precisely as in the natural, casual, and inoculated vaccine. This was confirmed by the appearances on the twelfth day.‡ On the twenty-sixth day, the crusts having fallen a day or two, the smooth pale rose-coloured scars were observed. Re-inoculation and re-vaccination here also proved unavailing.§ The lymph taken on the different days was used with different degrees of effect; but, when successful, produced perfect vaccine vesicles, as will shortly be seen.

In the third experiment in neither attempt was there any satisfactory result; the skin was thick, and the animal seemed inaccessible both to variolation and vaccination, and affords a type of a great number of his tribe. The same chances in all respects as to time, season, circumstances, and manner of operating, were allotted to this animal, but entire failure was the result.

* Vide plate xviii.
† Vide plate xix.
‡ Vide plate xx.
§ Vide plate xxi.

GENERAL OBSERVATIONS.

There was no apparent indisposition in either of the animals during the progress of the disease; the pulse, felt at the caudal artery, slightly accelerated at the acmé, and increased heat and redness of the mucous membrane of the vulva, were the only symptoms noticed; eating and drinking went on as before. As these experiments were conducted in the same manner and on a similar description of animal as those for the purpose of ascertaining the susceptibility of the cow to primary and secondary lymph, by inoculation, they are capable of showing only comparative results. As in those, so in these experiments, no pains were taken to exclude the animals or defend the punctures from the external air or the weather beyond the precaution of confinement to the cow-house on the first night of the operation; at all other times the animals were allowed to roam about the field. It is true that during the progress of the disease I was engaged in an attempt, on the same premises, to infect the cow with the blankets of a small-pox patient, who, though weak and feeble, was prevailed upon to manipulate and frequently approach the nostrils of that animal, and, at the same time, walk amongst the sturks. The small-pox, too, was prevalent, though not extensively so, around the premises, and the cow-pox was in existence in some distant dairies. The atmosphere was moist but not very cold. The mean temperature of the month, indicated by the external thermometer, was 39.6; the mean pressure, by the barometer, 29.62. There

was rain thirteen days in the month, seven days were overcast without rain, and eight fine with clouds. The prevailing winds were west, south-west, and north-west. I am thus precise in relating these facts, conceiving that where so little is known of the circumstances which favour the reception of variola by the cow, scarcely any particulars can be safely omitted in the description of a successful attempt.

Without attaching undue importance to any of the above circumstances, we may feel inclined to presume that the constitution of the atmosphere under which cow-pox and small-pox co-existed at the time of the operation, might possibly not be without its influence ; but the utter failure of the experiment on the third animal clearly shows that far more importance must be attached to the temperament and constitution of the animal, and the condition and texture of its tissues, as influencing its susceptibility. At the same time it is right to state that many failures, more or less decisive, have occurred to me at different seasons and under different circumstances, in precisely or pretty nearly the same modes of operating, when the skin and general appearance of the animals have induced more favourable expectations. In about half the number of such cases, retro-vaccination, subsequently performed, at irregular intervals, has succeeded in a more or less perfect degree. In the remainder it has been as unsuccessful as the previous inoculation with variola.

These facts, and the promptness and precision, (though of course under peculiar circumstances,) with which the vaccine punctures in the first ex-

periment answered, while only one of the variolous punctures tardily succeeded, afford striking proofs of the preference of these animals for the morbid virus natural to their kind. But the repeated though abortive attempts of the other variolous punctures on this animal to attain to the character of vesicles, and the final success of four out of eight variolous punctures, in concurrence with an equal number of lymphless tubercles in the second experiment, after the production of similar abortive tubercles in an immediately previous trial, plainly indicate also defect in the mode, the means, and the spot, and seem to declare that improvements in those particulars may be productive of better success.

Here we are forcibly reminded of the circumstances attending the communication of primary and secondary vaccine to cows and men, both casually and by the artificial method.* The rapidity and certainty with which the disease natural to the cow is propagated by the hands of the milker, and the difficulty and occasional futility of artificial attempts at such communication, especially with secondary lymph, the inferiority of our method on man with a foreign virus, compared with the promptness and effect of the casual process, and the readiness with which such a virus, perfectly humanized, may be propagated from man to man by the artificial method, teach us that, to subdue or even to diminish the repugnance of the cow to a strictly human virus, we must have recourse to other means and measures

* Vide Progress of the Variolæ Vaccinæ, page 304; Casual Cow-pock in Man, page 330; Vaccination of the Cow, page 352; Retro-vaccination, page 354; Vaccination of Man with Primary Lymph, page 342.

than those by which, at times, we succeed in communicating its own. My experience has been too limited, my experiments insufficiently varied, to enable me to speak with precision on the best mode of retro-vaccinating, much less on that of variolating the cow. To acquire such knowledge, more time and ampler means than I have hitherto had at my disposal I am persuaded are absolutely necessary; but I will venture to throw out the following suggestions, which have reference to the selection of the subject, the season of the year, and the mode of operating.

There can be no doubt that the nearer we approach the practice of the "best vaccinators of the cow"—the milkers—the more likely we are to succeed; and although, if it were possible to employ a number of small-pox patients to milk cows when their teats are chapped and cracked, we should not meet with the success that attends the manipulations of the former with a native lymph, yet it would not be unreasonable to expect a larger measure of success by this than by any other mode.* But the teats and udder of the milch cow, particularly with a thin skin, certainly should be selected in preference to any other part of the animal. It would be well not to have the animal too old, and the best possible assurance of its not having been the subject of the vaccine should be obtained. The back part of the udder, as being more out of the way of the milker, and more easy of access, would be preferable; but some part of the teat might be chosen which is least in danger of the casualties of milking—about the base,

* According to Dr. Waterhouse (in a letter to Dr. Jenner), the casual communication of variola to the cow has thus happened in America. Vide Report of the Vaccination Section, page 304.

for instance. If, however, the sturk, the young heifer, or young bull must be the subject, either the prolabia of the vulva or the scrotum would afford the best prospect of success, especially if the animal be well bred and have a fine thin skin, and be of a light colour. I have found punctures on the skin, between the lip of the vulva and the tuberosity of the ischium, succeed better than those on other parts in that vicinity. It seems not improbable that some preparation of the parts might usefully be practised. The skin might be rendered more sensible and more disposed to absorb by covering it with some adhesive substance for a week or two before the operation. For instance, a mass of moistened clay might be affixed and carefully retained in a moist state.* I don't know that there is any advantage in a deep puncture, but the skin should be fairly incised. Superficial wounds, *if of long standing*, seem likely to answer very well; they might, therefore, be easily made in anticipation, and in imitation of the casual fissures on the teats of the cow.† Liquid small-pox *lymph*, the

* I have often succeeded in procuring vaccine vesicles *without punctures*, on the skins of children especially and young persons, by keeping lymph in contact with the skin, and excluding it from the air by a coating of blood. Active lymph, blended with blood, casually trickling down the arm and drying in the most dependent part will often give rise to a vesicle. Not many days since I had a case where such a vesicle, at a distance of four inches from the inoculated vesicles, attained, on the twelfth day, the size of a small horse bean, and having no *firm* connection with the skin at its centre, like the casual vesicle on the cow, it acuminated on the eleventh day, as perfectly as on that animal. Vide page 326, note. In our operations on animals we might take this hint.

† We are told by Dr. Jenner that Mr. Tanner succeeded best in retro-vaccinating the cow in an old superficial wound from which he had removed the crust. Such wounds, deluged with variolous lymph, and *excluded from the air*, might be highly serviceable.

earlier taken the better, not later than the seventh or eighth day, the fifth or sixth, seems preferable, and it should be used abundantly. We see points will answer, but the liquid lymph is obviously more advantageous and infinitely more convenient.* But as it is very probable that the success of the operation may be greatly affected by the state of the atmosphere, as influencing the system and particularly the condition of the skin of the subject, this must receive especial care. Extreme heat and extreme cold seem alike unfavourable to the success of inoculation, both of small-pox and of cow-pox, as they are to the spread of infection, especially if attended with corresponding dryness.† Mildness and moisture would appear to be necessary. That condition of atmosphere which is well known to be favourable to the propagation and malignancy of small-pox of course would be advantageous—warm, close, and moist—and such as an experienced inoculator of small-pox would have *avoided* for his operations. His business was

* Variolous virus may be taken in bulbous tubes, or on small dossels of lint, and preserved between two plates of glass, one of which has a depression for its reception, such as Dr. Jenner used in sending liquid vaccine lymph to Bagdad, &c. They are very convenient. Vide *Baron's Life of Jenner*, vol. i., page 420.

† I have often observed the retarding effect of cold on variolation, and particularly of a dry easterly wind, more especially on those who are much in the air. Dr. Adams gives a very interesting account of the effects of the *Leste*, or hot and dry south-east wind of Madeira, on vaccination, inoculation, and infection in general.—Vide *Medical and Physical Journal*, vol. ix., page 314. Griva mentions the difficulty experienced in many parts of Italy of vaccinating in a dry and furfuraceous state of the skin. He successfully used emollient lotions preparatory to the operation.—*Epidemia Vajuolosa e Lavori Vaccinici*, page 97.

to mitigate; ours is to aggravate; we must, therefore, adopt the very means that he would studiously reject. Many punctures, much lymph, every natural advantage, and all the resources of art, seem necessary to ensure success to a moderate extent. Those who, like myself, attempt to sow a foreign seed in a soil with whose qualities and capabilities we are but indifferently acquainted, must not expect the same amount of product that doubtless will accrue to more expert, more favourably situated, and more experienced cultivators.

EFFECTS OF THE LYMPH.

Experiment first.—I need scarcely say that the effects of the lymph obtained from the above experiment were watched with intense interest, not unmingled with anxiety. Although some acquaintance with the physical characters of the natural and casual vaccine afforded sufficient assurance that I was neither rashly nor recklessly performing hazardous experiments on man, yet I could not be unmindful of the insidious but serious results of the very interesting and valuable experiments in India, performed by Mr. Brown, before alluded to, by which it appears that a vaccine disease, propagated from the cows at Silhet, had *ultimately and unexpectedly* been accompanied by a varioloid eruption, and had assumed a fatal character.*

* *Quarterly Journal of the Calcutta Medical and Physical Society*, No. ii., April, 1837. Also *Dr. Baron's Life of Jenner*, Vol. ii.; Appendix.

My concern was not a little increased, *for a time*, by the following incident:—My assistant, Mr. Taylor, to whom I had entrusted the lancet used in opening the variolous vesicle in the first experiment, on the tenth day, while I was engaged in the tedious process of charging points therefrom, punctured the skin of his own hand, between the thumb and fore finger, with the instrument while moist with lymph, a circumstance with which at the time I was unacquainted. On the fourth day* afterwards he directed my attention to a hard, deep red, papular elevation on the spot, stating the cause, and at the same time assuring me that he had been vaccinated in infancy, and had subsequently had modified small-pox. On the fifth day there was a papulo-vesicular elevation, surrounded with a dark red areola, and much uneasiness in the part. In the evening, head-ache and other febrile symptoms appeared, with roseola and fiery red papulæ on the face and other parts. On the sixth day a more diffused and lighter areola surrounded the less abrupt elevation, which was now more perfectly vesicular; the constitutional symptoms increased, and the papulæ, on the face, neck, trunk, and limbs, exhibited ash-coloured summits, and, through a lens, appeared to have slight central depressions. On the seventh day it was manifest that the disease had reached its acmé on the previous day. The areola was diminished, the vesicle was more apparent, some of the papulæ presented light straw-coloured summits, and the roseola was declining, with an abatement of the febrile symptoms, and a diminution of the tender-

* Vide plates xxii. and xxiii.

ness in the axilla. On the eighth day all these changes were more obvious, although he was not free from head-ache; the papulæ were more yellow, and some were desiccating; the vesicles were larger but less active, and the areola was comparatively pale. This was evidently modified vaccine in a sanguine habit, with roseola and vesicular or vaccine lichen.

I had inserted twenty points, charged from the variolous vesicle, on the tenth day, into five children, making four punctures in the left arm of each child, viz., James Bryant, aged two years, in delicate health, dark complexion; Ann Nicholson, aged one year, healthy, fat, florid, but phlegmatic; Henry Gibbs, aged one year and three-quarters, very fair, healthy; Joseph Woodbridge, aged three years, robust and remarkably florid; George Woodbridge, aged five months, plump and healthy. In all, the punctures were early inflamed; but the inflammation subsided, and the papular stage was late in all—the sixth, seventh, or eighth day before it was possible to determine the probability of any result, when a dark dull red pimple occupied the place of some of the punctures, for many of them failed. Vesicles with areolæ were formed at different periods in each.

Bryant, becoming ill with diarrhœa soon after vaccination, produced only one vesicle, with an areola at the height on the fifteenth day; the vesicle bluish and remarkably large. Nicholson* yielded two fine vesicles with full areolæ, and two papulæ on the thirteenth day. Gibbs had but one vesicle,

* Vide plate xxiv.

fine and pearl-like, with fully developed areola on the eleventh day. Joseph Woodbridge had two vesicles, attended with areolæ on the tenth day, which were very extensive on the twelfth, and did not decline till the fourteenth day.* George Woodbridge entirely failed. Thus twenty punctures yielded but six vesicles. In all these cases the primary constitutional symptoms were very slight; the secondary proportioned to the extent and character of the areola: hence Joseph Woodbridge suffered severely, had vomiting, and delirium. No eruption was observed in any of the cases except his; he had extensive roseola.

On three subjects, aged respectively eleven years, ten months, and two years and a half, some of the remaining points were employed; into these, also, were inserted, at the same time, points charged with ordinary vaccine lymph. In all three subjects the latter took effect in every puncture; while only five out of eight punctures with the new lymph answered, papulation being tardy as before; while the old lymph advanced as usual. As the areolæ of the vesicles from this lymph began to form, the sluggish vesicles from the new began rapidly to advance, and ultimately ran the same course, but did not eventually attain the same size, though perfectly well developed.

Six points, charged with lymph taken from the vaccine vesicle of the fifth day, on the variolated sturk,† were inserted into two subjects at the same

* Vide plates xxvi. and xxvii.

† Vide plate xii.

time as points charged with lymph from the variolous vesicle of the tenth day. One, Emma Churchill, aged five years,* produced, from three punctures with the latter, two *papulæ* only; but from three punctures on the right arm, with the former lymph, two very fine active *vesicles*, in which the areolæ began on the ninth day, and was fully developed on the eleventh.† In the other case, Richard Tompkins, aged four years, both sets of punctures took effect, but those with the retro-vaccine lymph were more early developed; the areolæ of both commenced on the ninth day, and declined after the eleventh. The symptoms in both subjects appeared on the approach of the areolæ, and were rather severe during its activity. In the subsequent removes of the lymph from the variolous vesicle and the retro-vaccine vesicles, and when propagated from arm to arm, it appeared rather more energetic than the ordinary lymph. Trials were made of both on the same and on separate subjects. In the subsequent removes of the new lymph, in the liquid state, by trials on the same and on different subjects at the same time, it was impossible to discover the slightest difference in its course and effects, whether derived from the variolous vesicle of the tenth day, or the retro-vaccine vesicles of the fifth or seventh day.‡

Experiment second.—The lymph from this experiment, on the sixth day,§ was employed on four subjects, viz., Mary Ann Hughes, aged two years

* Vide plate xxviii.

† Vide plate xxviii., figures i., ii., iii.

‡ Vide plates ix., xii., and xiii.

§ Vide plate xvi.

and a half, fat, florid, but flabby and phlegmatic; George Woodbridge, aged five months, (the subject of experiment with the other primary variola vaccine lymph;) Ann Clarke, aged two years, robust, plump, florid, and fretful; James Brown, aged ten months, florid, plump, and healthy. In all these cases, though the punctures early inflamed, there was the same irregular and tardy appearance of the vesicles as above described in the use of the first variola vaccine lymph. In Hughes, papulation was doubtful between the seventh and eighth days; no signs of vesiculation till the tenth day, and then in only two of the punctures. On a dark red hard base the vesicles slowly advanced, and on the twelfth day the areola commenced and continued to augment till the end of the fourteenth day, when full-sized vesicles were perfectly developed, of a bluish white with a greenish centre. Bryce's test, in three punctures with secondary variola vaccine lymph, was employed on the eighth day, and with the usual results—complete and simultaneous development. George Woodbridge again failed.* In Clarke there was doubtful papulation on the sixth day in *three* punctures; on the seventh day one appeared slightly vesicular: all were of a deep red, as before described; on the eighth day the summits of all the papulæ were ash-coloured and slightly depressed; on the ninth day deep damask, hard, and elevated papulæ, with ash-coloured summits,

* Thirteen days afterwards he was successfully vaccinated from Emma Jaycock, page 409, with her (ninth day) variola vaccine lymph. On him it was the *second* remove.

scantily supplied with lymph; one was seated on a broad, dark red, elevated base, (as in Joseph Woodbridge's case from the first lymph.) On the twelfth day the areola commenced, and with it an abortive lymphless tubercle in the situation of the remaining puncture.* On the fourteenth day the areola declined; but much induration and inflammation continued for several days.† In James Brown, on the sixth day, there were two doubtful, dark red papulæ, and two small vesicles on a hard livid base. On the seventh day the two papulæ had subsided, and there were clearer indications of vesiculation, still on a hard livid base; on the eighth day the ash-coloured vesicles were more distinct; base still hard and inflamed. On the tenth day these livid tuberculo-vesicular elevations were as large as peas, and yielded more lymph. On the eleventh day the areola was manifest around them, and both presented the appearance of one of the vesicles in Clark, and both the vesicles in Woodbridge, on the same day.‡ Pear-like vesicles on a dark red, abrupt, elevated, circumscribed base. On the thirteenth day the areola declined. Here sixteen punctures produced only seven vesicles, and one abortive lymphless tubercle. In these cases, also, the constitutional symptoms were scarcely noticed till the appearance of the areola, and with its increase they augmented, with its decline they disappeared; they were certainly severe. Some of the points, charged

* Vide plate xxv., figure i., where the broad, hard, red, elevated base is well depicted.

† Vide plate xxv., figure ii.

‡ Vide plate xxv., figure i.; and plate xxvi., figure ii.

on the sixth day from the variolated sturk, were inserted into the same subjects at the same time as *liquid* lymph from Emma Churchill.* The vesicles resulting from these points, though for a time tardily developed, as above, were ultimately hurried on in their course by the promptness and activity of the *liquid* retro-vaccine lymph, so that on the eleventh day it was not possible to distinguish them, as in the case of Rebecca Walker, for example, aged one year and three-quarters.† Points, charged with the primary variola vaccine lymph, of the sixth, eighth, ninth, and tenth days‡ were used on seven more subjects§ with similar results—failure of some punctures, or more or less tardy or normal development of the vesicles, and all these phenomena occurred irrespective of the age of the lymph, whether of the sixth, eighth, ninth, or tenth days. I shall give two examples—one being the most successful, the other not without interest. Emma Jaycock, aged fourteen, dark swarthy complexion, thin skin, rather florid: two points of sixth-day lymph, and four of eighth-day lymph, were inserted into six punctures. Henry Jaycock, aged fourteen (twin brother), dark complexion, thin dusky skin: two points of sixth, two of eighth, and two of tenth-day lymph, were used in six punctures. In Emma Jaycock, on the fifth day, four of the papulæ had ash-coloured summits,

* Retro-vaccine from the variolated sturk, vide plate xxviii.

† Vide plate xxix., figures i., ii., iii.

‡ Vide plates xvi., xviii., xix., xx.

§ Three of them under the care of my colleague, Mr. H. Hayward, who kindly allowed me to observe the results.

and seemed vesicular; two were doubtful. On the seventh day there were five small distinct reddish grey or ash-coloured vesicles, one very small; but I managed to take lymph, and inserted it by five punctures into a younger brother. On the eighth day* the vesicles were advancing, of unequal size and of irregular form. Here I was forcibly struck with the strong resemblance some of these vesicles bore to those of the eighth day, depicted in Jenner's work,† on the arm of Hannah Excell, which he thought so remarkably like the results of small-pox inoculation. My patient stated that she felt slightly indisposed on the fifth and sixth day, that the axilla was painful on the seventh day, and that she was then giddy and sick, but felt worse on this, the eighth day. I charged points and glasses, and vaccinated an infant sister. On the ninth day the areola commenced, and she complained only of head-ache; on the eleventh day it was fully developed, when all her symptoms returned in an aggravated form. On the twelfth day it declined,‡ but the turgid vesicles having burst the flimsy cuticle, renewed inflammation and induration with circumscribed sloughing and ulceration of the skin ensued, and rather deep scars are now visible. Henry Jaycock, on the fifth day, promised five vesicles for his six punctures; but being an irritable, intractable lad, he completely destroyed them with his nails, so that they were never properly developed. Subsequent vaccination, however, has been un-

* Vide plate xxxi., figure i.

† *Inquiry*, 1798. Plate iv.

‡ Vide plate xxxi., figures ii. and iii.

successful.* By this time I had succeeded in propagating, with the second remove of the first variola vaccine lymph, the retro-vaccine lymph from the same sturk, and the variola vaccine, sixth-day lymph, from the animal in the second experiment; and, desirous of comparing their character and effects, I selected a tractable though not a good subject, as regarded skin, for this purpose. Hannah Rogers, aged twenty-six, robust, florid, dark but thin skin, and inserted into six punctures, on her broad fleshy arm, lymph of the sixth day, from Rebecca Walker,† and lymph from James Brown,‡

* The *permanency* of the vaccine influence in this and in those cases mentioned by M. Bousquet, (*Traité de la Vaccine,*) where the incipient vesicles were destroyed by caustic, doubtless will be questioned by many. That the integrity of the vesicles is not essential to the production of the constitutional and preservative influence has been assumed from the experiments of that gentleman, and analogous cases to this now related. I have certainly met with not less than ten such cases, in which, at various periods, from fourteen to eighteen years afterwards, I have been unsuccessful in re-vaccinating. But this does not appear to be always the case. Out of thirty-five cases of ruptured vesicles, at the Nottingham Vaccine Institution, (*Medical and Physical Journal,* vol. xvi., page 137,) three passed through the regular vaccine three or four months subsequently. If, as Jenner contended, the *primary* are the *essential* symptoms, then the integrity of the vesicle and the development of the areola are desirable only as probable indications of a fact which Bryce's test alone declares. I have met with seven or eight cases where the vesicles have been imperfectly developed, and where subsequent re-vaccination, after the same length of time, has been still less imperfect; but in one of these, who did not appear, as desired, for re-vaccination, a severe attack of small-pox occurred ten years afterwards. One of the above cases has been exposed to small-pox by inoculation once, and repeatedly to infection, without effect. Four patients, in one family, were vaccinated sixteen years ago by me; they had small vesicles prematurely formed, areolæ on the sixth day, which was extensive, and terminated on the eighth. All were indisposed, and have resisted re-vaccination to this very day. I have met with similar cases in other individuals, attended with similar results.

† Plate xxix.

‡ Vide page 408.

of the sixth and eighth day, second remove, of second variola vaccine. In each puncture two points, well charged with each lymph, respectively, were inserted and carefully retained.* On the ninth day nothing could be more uniform than the appearance of all the vesicles† when the areola commenced; that uniformity they maintained throughout. On the eleventh day the areola declined, when the vesicles exhibited a remarkably blue tint, which increased till the thirteenth day, and was equal in this respect to any I ever saw in the casual cow-pox on the hands of the milkers. The primary symptoms were slight on the fifth and sixth days, but acknowledged; her chief indisposition arose on the ninth day; severe head-ache, nausea, and general pain. The same identity of external character and general effects appearing in other trials, and believing it useless, and finding it inconvenient to keep up three stocks of lymph, I ceased to propagate from the two first after the fourth remove, when the vesicles were every thing that could be desired, even on a puny, sickly, rickety child, aged two years and a half.‡ I then confined myself to the

* In all our experiments, doubtless, much must be allowed for the use of dry lymph, particularly in the use of that which is imperfectly assimilated. Here I thought two well charged points to each wound would be more prompt than one.

† Vide plate xxx., figure i.

‡ How often do we observe that those subjects from whom we expect the least, yield the most. Some of the finest vesicles I ever saw have been on rickety children not actually indisposed at the time. It is not the health and temperament alone of the subject, but the condition and quality of the dermic tissue that determines the development of the vesicle, and hence we never can predict beforehand the character of the vesicle without attention to this particular.

stock derived from Emma Jaycock.* Her brother, Lewis Jaycock, aged twelve, was vaccinated from her vesicles on the seventh day; he had a dark dusky complexion, and very thin skin, and was not so florid. He exhibited papulæ in every puncture on the fourth day, all of which were vesiculated on the fifth, on the evening of which day his axilla was sore; he felt head-ache, was giddy and sick. On the sixth day all these symptoms had rather increased, the vesicles were advancing; thirty-eight points were charged, and two children vaccinated from him, and he was re-vaccinated with his own lymph. On the seventh day he was in all respects better; vesicles advancing; took thirty-eight points and vaccinated a child. On the eighth day the areola commenced, and the *test* vesicles were forming. On the ninth areola pretty extensive, though pale, from the character of his skin,† when head-ache, &c., returned. On the tenth areola increased, but only two vesicles were entire; the rest spontaneously burst or were rubbed;‡ still complains. On the eleventh day they were nearly all destroyed. Here the vesicles were remarkably small, but not so on the subjects vaccinated from him; on the three children, (two infants,) all healthy and robust, with thick skins, nothing could be more satisfactory than the character of the vesicles, and the evidence of constitutional affection. As an example, I select the case of — Adcock, an infant four months old,§ vaccinated by Mr. J. H. Ceely, and consequently

* Vide plate xxxi.

† Vide plate xxxii., figure i.

‡ Figure ii.

§ Vide plate xxxiii., figures i. and ii.

the third remove from the variolated sturk. Fretfulness and indisposition were manifest on the sixth and seventh day; but the active symptoms arose with the areola, which, at its height, had a bright damask hue. The vesicles were equal to any I ever saw, on similar subjects, from the early removes of primary lymph, and were not completely desiccated till the eighteenth day. The fourth remove to an infant four months old, with a plump, tense, thick skin, the vesicles were equally fine in all respects. From this was vaccinated — Slaughter, aged eleven months,* where, on the fifth, sixth, and seventh days, slight indisposition was manifest; but on the eighth, when the areola commenced, smart symptoms of fever were present, which continued to the tenth, when it declined. Nothing could be more satisfactory or gratifying than the progress now made, which it would be needless further to detail; I shall therefore abstain from the description of individual cases, after adducing one example from the fourteenth remove, as a type of what might be produced in similar subjects, viz., an infant fourteen months old, florid, plump, and healthy, with a fine, clear, thick, smooth skin.†

In the majority of instances, in propagating from arm to arm, distinct papulation was apparent on the second day; on the third it was not only visible, but elevated and well defined; on the fifth and sixth, vesiculation was abundantly obvious, and lymph was often taken on those days; on the seventh day vaccination was frequently performed,

* Vide plate xxxiv., figures i. and ii.

† Vide plate xxxv., figures i. and ii.

and points were often charged; on the eighth the vesicle commonly exhibited a bold, firm, and glistening aspect;* between this period and the ninth day the areola generally commenced; (but in young infants, with tense and sanguine skins, it appeared *early* on the eighth;) by the tenth day the vesicle was commonly in its greatest beauty and highest brilliancy, glistening with the lustre of silver or pearl, having the translucency and appearance of crystal, or shining with a pale blue tint, occasionally of a dull white or cream colour, bold and elevated, with a narrow centre and broad margin, or flat and broad in the centre with an acute margin, occasionally not raised above the level of the skin; on this and the eleventh day an extended and generally vivid areola existed, with more or less tension and induration on the integuments; at this time the lymph was frequently pellucid, and often perfectly efficient. From the eleventh to the thirteenth day, gradually increasing; in many individuals, both children and adults, sometimes the entire vesicle, at others only the central parts, reflected a blue or slate-coloured tint from the congested or ecchymosed subjacent adventitious structures, proportioned to the texture and degree of translucency yielded by its desiccating epidermis.† On the thirteenth and fourteenth day, particularly on clear skins, moderately thick, the vesicles attained a considerable size, measuring often in their longest

* Although on this day most vesicles were abundantly yielding, many well-formed vesicles afforded an inconvenient and scanty supply till the ninth day.

† Vide plate xxx., figure iii.

diameters six and a half or seven lines,* and acquired a light-brown centre, from commencing desiccation, which was surrounded with an outer margin of dull white or pale dirty yellow, soft and flaccid, and still possessing fluid contents. During this period the areola, of a dull red or damask hue, would revive and decline again and again, and even to the sixteenth or eighteenth day, the period to which complete desiccation was frequently protracted. The crust commonly partook of the form of the vesicle; it was often prominent and bold, varying in colour from that of chesnut to that of a tamarind stone. It fell generally about the twenty-third or twenty-fifth day, often later.

The cicatrices were of variable depth and extent. When the vesicles remained unbroken on a thick sanguine skin, they were deep; but on a thin skin, shallow; they were not always proportioned in width to that of the vesicle, the smallest cicatrix often succeeding the largest vesicle; but the later the crust fell, of course the deeper the cicatrix, which on these occasions was often beautifully striated.† I need scarcely say that where the vesicles were accidentally broken, or spontaneously burst, much mischief ensued, deep sloughing of the skin, &c., &c. Spontaneous bursting did not often occur, except in those subjects possessing the beforementioned and well-known obnoxious constitutional and dermic characteristics, upon whom we must always use active lymph with some risk.

* Vide plates xxxiii. and xxxv., figure ii.

† Inspection of many scars, caused by this lymph, shows that in a few months little is to be learned in many subjects, with thin skins, of the degree to which the vaccine influence has been exerted on them.

When the lymph in the first remove produced normal vesicles, and as soon as it had passed readily from arm to arm, the constitutional symptoms, though mild, were most commonly well marked. In infants, restlessness, fretfulness, and inappetency, about the fifth or sixth day, were very common; sometimes as late as the seventh day; very few escaped feverish symptoms on the ninth and tenth days; many had vomiting and diarrhœa. From childhood up to puberty, the primary symptoms, from the fifth to the seventh day, were unequivocally visible, and often complained of; fever, vomiting, delirium, and diarrhœa, were not unfrequently witnessed at the commencement or during the progress of the secondary symptoms. In adults, of course, more complaint was made; headache, chilliness, anorexia, and sometimes thirst, on the fifth or sixth day, increased on the seventh day, with axillary tenderness; but on the ninth and tenth days much general febrile complaint, disinclination, and even inability to leave the bed. But in several instances amongst young children little or no complaint was made or indicated. All the members of the same family, vaccinated from the same source, might be differently affected. One, for instance, would not cease from pastime, occupation, or meals, while another, particularly if older, would be indisposed several days. Neither the number nor the magnitude of the vesicles seemed to determine the amount of the primary disturbance. If properly developed, small vesicles often gave rise to marked constitutional symptoms; and the most splendid vesicles

were often seen with trivial, sometimes scarcely appreciable disturbance.

The secondary symptoms were often as active with three or four as with six or eight vesicles. Acceleration of the pulse was frequently noticed when no other symptoms appeared. Both primary and secondary symptoms very commonly showed a remitting type.

Eruptions.—This most important part of the effects of the lymph of both experiments, as before stated, engaged my particular attention. In no adults, except in the case of my assistant, Mr. Taylor,* was there any attendant eruption;

* Page 403.—This case affords another illustration of the susceptibility of many persons to a form of the vaccine, who would resist small-pox; Mr. Taylor having been exposed for hours, a fortnight before this event, to the infection of small-pox, while assisting me in charging points and glasses with variolous lymph. Subsequently to this I vaccinated myself with the variola vaccine lymph; had three modified vesicles, with extensive areolæ, and slight secondary symptoms. I had casual small-pox very mild in childhood. Perfect vaccine I have seen after malignant variola, with petechiæ. The following cases are curious; they were under my own care, and were vaccinated at the fortieth remove of the lymph of the second experiment. A male child, aged two years, very fair, born eight weeks after his mother's recovery from a dangerous attack of small-pox sixteen years after vaccination, and at birth covered with a multitude of shrivelled variolous pustules, the marks of which were long in disappearing, was vaccinated in December last, and yielded perfect vaccine vesicles, and one supernumary vesicle, with the usual symptoms; from him I vaccinated a female child, aged five years, whose mother had been affected with mild casual variola four months before her birth, at which time she exhibited no marks. Here the vaccination was modified, the areola appearing on the seventh day, and subsiding on the ninth. An infant vaccinated at the same time showed perfect vaccination from the first subject. But I have known such cases as the above male child resist variolous inoculation; and others are stated to have been equally insusceptible of the vaccine.—Vide *Bousquet Traité de la Vaccine*, page 51.

nor in any child the slightest approach to any thing of a varioloid character. Roseola, strophulus, lichen, were the principal eruptions.

The papular eruptions, as observed by Jenner, frequently became vesicular. In a robust infant, aged six months, vaccinated at the sixth remove from the second experiment, at the incursion of the primary symptoms, an eruption of strophulus volaticus appeared of unusual severity, attended with much constitutional disturbance. The summits, both of the solitary and clustered papulæ, were vesiculated to an extraordinary degree ; and the eruption being so thickly strewed on the face and body, I found it difficult to convince the parents, their friends, and neighbours, that it was not small-pox. It disappeared and reappeared for three weeks. The other species of strophulus, particularly albidus, often assumed the same character as did those of lichen. In a few instances a vesicular eruption of a pemphigoid character, either in large bullæ or closely resembling lenticular varicellæ, was observed, both in a solitary and in a grouped form. This seems to me to be strictly a vaccine eruption. It is seen on the cow, and often on young dogs, during or after the secondary vaccine symptoms. It will subside in a few days, or continue for some weeks in children.* In one case actual varicella appeared on an infant, aged fifteen months, six days after vaccination at the sixth remove. The vaccine

* Vide page 327 ; also, *Willan on Vaccine Inoculation,* Appendix, No. vii.

vesicles became suddenly flattened, and the disease was impeded for two days.*

Supernumerary vaccine vesicles were often met with in, near, or distant proximity to the seat of vaccination, from the practice of free incisions and a liberal allowance of lymph;† but small *eruptive* supernumerary vesicles were observed in several cases at the period of full development of the areolæ, and within its sphere, when *points only* were used. In one case a vesicle appeared on the shoulder, and one on the neck. In two other cases two vesicles appeared on the abdomen, all during the early removes of both stocks of lymph.

The effects of the lymph have been well observed at Cheltenham, where it has been extenively used‡ by Mr. Coles and many other surgeons. It was in use many months at the Small-pox and Vaccination Hospital in London; and has been attentively observed at Bristol by Mr. Estlin;§ also at the Cow-pock Institution of Dublin;‖ and by many private practitioners.

* I failed in my attempts on several eligible subjects to inoculate with the pellucid lymph of these varicellous vesicles. The disease was prevailing in the village at the time; and two children of the same family, from one of which this infant was vaccinated, became infected with varicella, soon after the infant recovered. This disease, called in Buckinghamshire "the blisters," is continually met with, both sporadically and epidemically, without any connexion with variola. I have often seen it not only after small-pox, but soon after vaccination, and in one instance a month after direct vaccination from the cow. Dr. Thomson has shown that variola assumes a *varicelloid* character; but it does not appear to me that he has succeeded in disproving the distinct and independent nature of varicella.

† Vide page 326, note.

‡ Vide *Report of the Vaccination Section of the Provincial Medical and Surgical Association*, page 25.

§ *Medical Gazette*, December 27, 1839.

‖ Vide *Report*.

GENERAL OBSERVATIONS.

In the transfer of the above lymph from the animals to man, my attention was forcibly arrested by the difficulties attending the process; and in the entire failure of so many punctures, the production of so many lymphless papulæ, and the formation of so few perfect vesicles, I recognized phenomena so common in similar trials with primary lymph.* In some instances the difficulties were not completely overcome even in the second removes. The marked improvement, in subsequent removes, in the development of the vesicles, and the active manifestation of the primary and secondary symptoms, were not less apparent than in the use of natural lymph under corresponding circumstances, except that in very few instances, and those principally in later removes and in peculiar subjects, there was not observed that disagreeable, inconvenient, and mischievous acrimony so peculiar to the former lymph. The lymph from the vaccine vesicles on the first experiment seemed to have acquired activity without causing the same amount of difficulty in its transmission.

These experiments with the variola vaccine lymph on man, show the necessity of having a number of subjects of different temperaments on which to employ it, on its first removes, to ensure success. It seems highly probable, too, that the direct transmission of the liquid lymph from the animal to children will save much trouble and conduce to greater success.

* Vide page 342.

It has been justly observed by Dr. Adams,* "that diseases in one class of animals, when communicated to another, seem to alter many of their properties;" and no more appropriate illustration can be adduced than the *vaccine modification of variola.* The wonderful sagacity of Jenner taught him first to believe and announce the important fact of the affinity between vaccine and human variola; and through the brilliancy of his genius, his unwearied industry, and boundless philanthropy, it has been made subservient to the welfare of mankind. Hence the fact in question proves deeply interesting to all. But the physiologist cannot fail to desire some knowledge of the probable causes of such remarkable modification. In the prosecution of enquiries of so interesting and comprehensive a nature, of course he will not confine himself to the physiology and pathology of the cow; but, in considering the structure of this animal, and its functions in health and in disease, his attention is arrested by many remarkable peculiarities. The abundance of its cellular and adipose tissue, its low vital energies, its sluggish habits, the tendency of its diseases to pass into the chronic state, the difficulty of exciting suppuration in an abscess and in setons, clearly evince the antiphlogistic and lymphatic temperament.† Hence the insidious nature of

* *Observations on Morbid Poisons,* page 51.

† *Je puis errer, mais il me semble que, comme je viens de le dire, l'abondance des tissus cellulaire et graisseux, l'energie vitale toujours moindre, toutes choses égales d'ailleurs, dans le beuf que dans le cheval, les habitudes lentes de cet animal, la tendance qu'ont ses maladies à passer à l'état chronique, la difficulté qu'éprouve la suppuration à s'établir dans les abcès, les sétons, démontrent évidemment l'association de la prédominance plus ou moins marquée du système lymphatique sur l'appareil vasculaire sanguin, et prouve l'existence du tempérament mixte que je viens de signaler.—Pathologie Bovine, par P. R. Gellé.*

many of its maladies, and their tendency to pass under favourable circumstances into the adynamic state. The well-known proneness of this class of animals to carbuncular, gangrenous, epizootic, and enzootic typhoid diseases, will greatly diminish therefore our surprise at the fact of their liability, in certain situations and under certain circumstances, to malignant vaccine, and even to variola. It would ill become me to do more than allude to this highly interesting subject, and point attention to the valuable records of such facts which are accessible to all.* I shall therefore conclude my remarks by an extract from an interesting paper, in the *Veterinarian*,† of Professor Dick, of Edinburgh, on Chronic Tumors in Cattle:—"I may here remark, that there is in cattle a strong tendency to this form of disease, under every circumstance in which a part is either inflamed from internal derangement or external injury. There is in fact, it appears, a constitutional weakness in cattle, from which their diseases have a strong tendency either to run rapidly into putridity, or to sink into the chronic form of the disease now in question. The constitution of their blood has a tendency to lead to this supposition; for in cattle there never is to be found, so far as I have seen, that separation of the constituent parts by which what is termed the *buffy coat* is made to appear."

* *Dr. Baron's Life of Jenner*, vols. i. and ii.; *Quarterly Journal of the Medical and Physical Society of Calcutta*, No. ii., April 19, 1837; *Report of the Vaccination Section of the Provincial Medical and Surgical Association*; and *Asiatic Journal*, December, 1839.

† June, 1839.

NOTE.—The unavoidable delay in the appearance of this paper, from the time required for the colouring of so many engravings, affords me the opportunity of stating that I have been unsuccessful in my endeavours to ascertain the mode of operating pursued by Gassner, in his successful experiments in variolating the cow, performed in 1807;* a circumstance with which I was unacquainted till some time after the success of my own.† This is much to be regretted; but I am gratified to learn that, since the announcement of those which I have just detailed, intelligence has been received of the success of Dr. Basil Thiele, of Kasan, in South Russia, in similar experiments. He appears to have been successful in 1836, at a time when I was fruitlessly engaged in endeavours to make arrangements for experiment. In 1838 he was again successful, and appears to have matured a plan upon which he relies for success. He selects milch cows, and performs the operation, in spring, on the udder, maintaining in the stable the temperature of 66° Fahrenheit. *Few* vesicles result from *many* punctures; and he rejects the animals on which I have chanced to succeed. But I must refer to the notice of his experiments, and a detail of his method, in the work alluded to.‡ I cordially congratulate Dr. Basil Thiele on his success, and consider his method both rational and ingenious, and well calculated to accomplish the object.

* *British and Foreign Medical Review*, January, 1840.

† It also enables me to state that, by means of the great advantages arising out of the circumstances alluded to at page 420, more than two thousand subjects have been vaccinated with the variola-vaccine lymph; and through more than sixty removes, under my own eye, it maintains the general character which I have described.

‡ *British and Foreign Medical Review.*

EXPLANATION OF THE PLATES.

PLATE I.

The casual cow-pox on the teats and udder of a black-and-white milch cow.

The disease is at the acmé; and the skin being fair, a slight areola is visible around some of the vesicles, many of which have a bluish central tint. It exhibits papulæ, vesicles with central crusts, unacuminated and acuminated vesicles; imperfectly developed and also broken vesicles, both solitary and interfluent. Those vesicles on the extremities of the teats, it will be observed, are nearly of the colour of the skin on which they are placed—a circumstance of itself sufficient to distinguish them from spurious or sub-epidermic vesicles.—This plate is referred to at page 330; vide also page 310.

PLATE II.

Teats of two different subjects, exhibiting later stages of the cow-pox.

Fig. 1 Exhibits the disease at the end of the second week. It shows vesicles with central crusts, acuminated vesicles, imperfectly desiccated vesicles, and vesicles further advanced in desiccation. The teat raw and swollen from the injuries sustained during milking.—Vide page 311.

2. The teat of a cow, with a fairer skin, exhibiting perfect cicatrices, cicatrices with secondary crusts, raw and imperfect cicatrices, and a crust still adherent on the base of the teat.—Vide page 312.

PLATE III.

Retro-vaccination, or vaccination of the cow with humanized lymph.—Vide page 355.

Fig. 1. Vesicles of different sizes on the ninth day, on a white skin.
2. The same vesicles on the tenth day; some having in the centre concrete lymph, which exuded from the punctures of the previous day.

PLATE IV.

The same vesicles, in a later stage, as in the last plate.—Vide page 356.

Fig. 1. Vesicles of the twelfth day, declining, with central crusts.
2. Vesicles of the thirteenth day, flatter, crusts darker and larger.

PLATE V.

Vesicles of a later date than those of the last plate.

Fig. 1. Vesicles of the seventeenth day, much reduced, crusts darker and larger.
2. The cicatrices of the same vesicles on the twenty-third day.

PLATE VI.

Retro-vaccination, on a dark thick skin, between the margin of the vulva and the tuberosity of the ischium.—This plate is referred to at pages 357 and 358.

Fig. 1. A vesicle at the seventh day, with a small central crust, two doubtful smaller elevations, at present tubercular.
2. The same at the tenth day, the vesicle at its acmé, the other elevations still doubtful.

PLATE VII.

The vesicles of the preceding plate, in a later stage.

Fig. 1. The vesicle at the eleventh day, flatter, and its central crust increased.
2. The same at the twelfth day, the vesicle much flatter, and its crust projecting. On the fourteenth day the two apparently passive tubercles exhibited a small central crust.

PLATE VIII.

Retro-vaccination of two different subjects, with different lymph, by small superficial punctures.—Vide page 359.

Fig. 1. With variola vaccine lymph. The vesicles on the tenth day, of a pale lead colour, with a narrow pale areola, the skin being dark, but thin. Irregular vesiculations are seen on the outer margins of the vesicles.

2. With retro-vaccine lymph, on a lighter-coloured skin. Vesicles of the tenth day, with a small pale areola.—Vide page 360.

PLATE IX.

Variolation of the cow.—Vide page 379. *This plate exhibits the first stage of the experiment detailed at page* 382.

On the left side of the vulva the variolous vesicle, as it appeared on the tenth day ; above it are two tubercles, and the marks of two abortive punctures ; beneath the vulva are two other passive tubercles, the result of the insertions of variolous lymph on the 1st of February. The vesicle has a small central crust, and was of a glistening pale rose colour. On the right of the vulva and underneath are seen the punctures made for the introduction of the vaccine points, the day previous, and when the variolous vesicle was in a doubtful state.

PLATE X.

The progress of the experiment referred to in the preceding plate, on the eleventh day.

The variolous vesicle flatter and duller, from the abstraction of lymph ; vide page 383. The variolous tubercles rather increased. The vaccine punctures of the third day more inflamed and elevated.

PLATE XI.

The progress of the experiment, referred to in the preceding plate, on the twelfth day.—Vide page 383.

The variolous vesicles greatly enlarged, and very active, with increased central crust. The tubercles enlarged. The fourth day of the vaccine punctures ; all appear vesicular, and give evidence, as Bryce's test vesicles, that the animal's system is under the influence of the variolation. At this time the inner membrane of the vulva seemed more florid.

PLATE XII.

The progress of the variolation experiment, referred to in the last plate, on the thirteenth day.

The variolous vesicles still on the advance and in an energetic state; central crusts much larger. It had a rosy glistening hue, and was bold and prominent. The tubercles did not advance. The vaccine vesicles of the fifth day advancing. On this day lymph was taken.

PLATE XIII.

The progress of the variolation experiment, referred to in the preceding plate, on the fifteenth day.—Vide page 384.

The variolous vesicle at its maximum of development, with a large central crust; it had a florid glistening appearance. The vaccine vesicles of the seventh day were also at their greatest development, had slight central crusts, and were surrounded, like the variolous vesicle, with a small pale areola.

PLATE XIV.

Progress of the variolation experiment, referred to in the preceding plate, on the seventeenth day.—Vide page 384.

Variolous vesicles greatly depressed, with a large projecting central crust. The vaccine vesicles in the same relative condition, flattened with projecting central crusts or desiccations of their surface.

PLATE XV.

Illustration of the second variolation experiment; vide page 385. *Progress of the experiment on the fifth day of the second attempt.*—Vide page 385.

Four hard elevations above and near the vulva; four dark damask papulæ on the under fold of the vulva, which is put on the stretch in order to exhibit what would otherwise be concealed.

PLATE XVI.

Progress of the second variolation experiment, referred to in the preceding plate.—Vide page 385.

Four upper elevations more enlarged, but at present lymphless. Four lower decidedly vesicular; lymph taken from the outer and lower vesicle on the right.

PLATE XVII.

Further progress of the second variolation experiment, referred to in the preceding plate, on the eighth day.—Vide page 386.

Four upper tubercles diminished. Four vesicles considerably enlarged, in an active state, of a light damask hue, (being on a thin vascular skin,) and have slight central crusts. Lymph again taken from the same vesicles, as pointed out in the last plate.

PLATE XVIII.

Further progress of the second variolation experiment, referred to in the preceding plate, on the ninth day.—Vide page 386.

Tubercles diminishing. Vesicles advancing; central crust increasing; two lower vesicles rather raw from injury sustained in taking lymph.

PLATE XIX.

Further progress of the second variolation experiment, referred to in the preceding plate, on the tenth day.—Vide page 386.

Vesicles at their maximum of development, having a pale bluish, reddish, glistening appearance, with a slight areola, at the base of two central crusts, increased.

PLATE XX.

Further progress of the second variolation experiment, referred to in the preceding plate, on the twelfth day.—Vide page 386.

Vesicles flattened, colour gone, filled with darker central crusts.

PLATE XXI.

Further progress of the second variolation experiment, referred to in the preceding plate, on the twenty-third day.—Vide page 386.

The cicatrices of the variolous vesicles, and marks of the four abortive tubercles. The cicatrices were perfectly smooth and slightly depressed, margins a little elevated.

PLATE XXII.

Vaccination with the variola-vaccine lymph obtained from variolating the cow.—Vide page 403.

This and the next plate illustrates the stages of the modified vesicles on the hand of my assistant, Mr. Taylor, who had been vaccinated in childhood, and subsequently went through modified variola.

Fig. 1. Represents the dark lurid pimples of the fourth day, on a florid thin skin, between the thumb and fore finger.

2. The rapid advance of the same, on the fifth day, on an abrupt hard base. Near the vesicle are placed fiery red papulæ, which appeared on the face, neck, and trunk, intermixed with patches of roseola.

3. The vesicles at the height on the sixth day, of a pale blue, with increased areola. The papulæ have vesicular summits of a grey or ash colour.

PLATE XXIII.

Further progress of the modified variola-vaccine vesicles, referred to in the preceding plate.—Vide page 403.

Fig. 1. The vesicles more distinct, deeper blue base, hard and elevated and very florid, on the seventh day, but the areola diminished. The vesicular summits of the papulæ straw-coloured.

2. The vesicle on the eighth day duller, flatter, and declining; elevation and inflammation less. The papulo-vesicular spots flattening and desiccating.

3. The crust on the twelfth day, on a dull slightly elevated base.

PLATE XXIV.

Progress of the variola-vaccine vesicles on Ann Nicholson, aged one year, from the first variolated sturk.—Vide page 404.

Fig. 1. Dark red papulæ of the eighth day; the other two punctures appear to have failed.

2. The papulæ converted into two fine crystal vesicles on the twelfth day; two papulæ in the seat of the other punctures.

3. The two vesicles at the height on the thirteenth day, rising boldly above the surface, and of a beautiful crystal appearance. The two papulæ enlarged, with areolæ.

4. The crusts on the twentieth day, with exfoliating cuticle.

PLATE XXV.

This plate is numbered out of order; it illustrates the variola-vaccine vesicles on Ann Clarke, aged two, from the second variolation of the cow.—Vide page 407.

Fig. 1. The vesicles on the twelfth day, embedded in swollen integument; the lower vesicle is thus situated on a remarkably prominent elevated base, of a very florid colour.

2. The vesicles on the fourteenth day; areola declining. The child was very florid; the arms as much so as the face.

PLATE XXVI.

Variola-vaccine vesicles on Joseph Woodbridge, aged three years; his arms excessively florid, like his face. Lymph from the first experiment.—Vide page 404.

Fig. 1. Two crystal vesicles deeply embedded in a tumid inflamed base on the tenth day. Two deep red papulæ within the limits of the areola.

2. The vesicles on the eleventh day more deeply embedded; the swollen base much more prominent; areola increased. The two papulæ enlarged, but the lymph less.

PLATE XXVII.

Further progress of the variola-vaccine vesicles, on Joseph Woodbridge, referred to in the preceding plate.

The vesicles at their maximum of development on the twelfth day; their tumid elevated bases, seen in the last plate, diffused into the surrounding areola, which is now remarkably intense, extending over the whole arm. The tubercles enlarged, but still lymphless.

PLATE XXVIII.

Vesicles on the arm of Emma Churchill, aged five years, produced by lymph taken, on the fifth day, from the vaccine vesicles of the variolated stuck.—Vide page 406.

Fig. 1. Two vesicles on the eighth day, and an abortive puncture.

2. The vesicles on the ninth day, of a pale blue, with slight areola; a pimple in the seat of one of the punctures.

3. The vesicles on the eleventh day, at their height, with deep damask areola; the pimple lymphless.

PLATE XXIX.

Vesicles on the arm of Rebecca Walker, aged one year and three-quarters, produced by lymph taken from Emma Churchill's vesicles (see plate 28), *and dry lymph, of the sixth day, from the second variolated sturk.*—Vide page 409.

Fig. 1. The three upper vesicles at the sixth day, from the liquid lymph of Emma Churchill. The two lower, at the same stage, from the dry lymph of the sixth-day vesicle of the second variolated sturk. They are less advanced, and of deeper colour.

2. The same on the seventh day; still there is a disparity.

3. All the vesicles on the tenth day, with a damask areola, when no difference was discernible.

PLATE XXX.

Variola-vaccine vesicles on the arm of Hannah Rogers, aged twenty-six, produced by dry lymph (*two points to each puncture*), *from the vesicles of Rebecca Walker* (plate 29), *and lymph of the second remove, from the second variolated sturk.*—Vide page 411.

Fig. 1. The vesicles of the ninth day; the two upper and the two lower are the second remove from the second variolated sturk; the two middle vesicles from Rebecca Walker.

2. The vesicles of the tenth day, with moderate areola.

3. The vesicles of the eleventh day; areola declining; vesicles very blue; the blueness increased till the thirteenth day. This blueness was frequently observed in very late removes, in thin and vascular skins.

PLATE XXXI.

Variola-vaccine vesicles on the arm of Emma Jaycock, aged fourteen, produced by lymph taken from vesicles, of the sixth and eighth day on the second variolated sturk, (plate 16 and 17.)—Vide page 409.

Fig. 1. Vesicles of the eighth day; the two middle vesicles from the eighth-day lymph; the rest from the sixth-day lymph.

2. The vesicles on the ninth day, with some areola.

3. The vesicles on the tenth day, and the areola increased. The large vesicle was very fine and of a clear crystal hue; the other vesicles had been more or less injured, and lymph was seen in a semi-concrete state on their surface. The next day, when the areola was at the maximum, they were all broken.

PLATE XXXII.

Variola-vaccine vesicles on the arm of Lewis Jaycock, aged twelve; second remove, from the second sturk. Lymph taken from the vesicles depicted in the preceding plate, on the seventh day.—Vide page 413.

Fig. 1. The vesicles on the ninth day, with progressing pale areola; remarkably small, and much like small-pox vesicles.

2. Two vesicles on the eleventh day; the areola declining; the rest of the vesicles burst or broken.

PLATE XXXIII.

Variola-vaccine vesicles on the arm of — Adcock, aged four months, remarkably plump and healthy, with thick, smooth skin.—Vide page 413.

Fig. 1. The vesicles on the tenth day, just as the areola was declining: they were very large, pearly like, with *emerald* centres.

2. The vesicles on the fourteenth day, imperfectly desiccated in the centre, and containing a fluid in the circumference, which was still vesicular, surrounded by a dull damask areola.

The lymph was taken from Lewis Jaycock (plate 32), and is a striking illustration of the degree to which vaccine vesicles may be improved in their development on suitable skins and better subjects.

PLATE XXXIV.

Variola-vaccine vesicles on the arm of — Slaughter, aged eleven months, a beautiful child, with blue eyes, florid cheeks, plump limbs, a remarkably smooth, clear, and thick skin; the fifth remove, from the second variolated sturk.—Vide page 414.

Fig. 1. The vesicles on the ninth day, with slight areola; they were beautifully milk-white, and had gum centres.

2. The vesicles on the tenth day, with the areola at the height: nothing could be more beautiful.

PLATE XXXV.

Variola-vaccine vesicles, on the arm of — Biggs, aged fourteen months; the fourteenth remove, from the second variolated stuff.—Vide page 414.

FIG. 1. The vesicles on the tenth day, with deep areola and hard integuments. Here, as in similar subjects and like skins, the vesicles were beautifully bright and resplendent, with greenish centres.

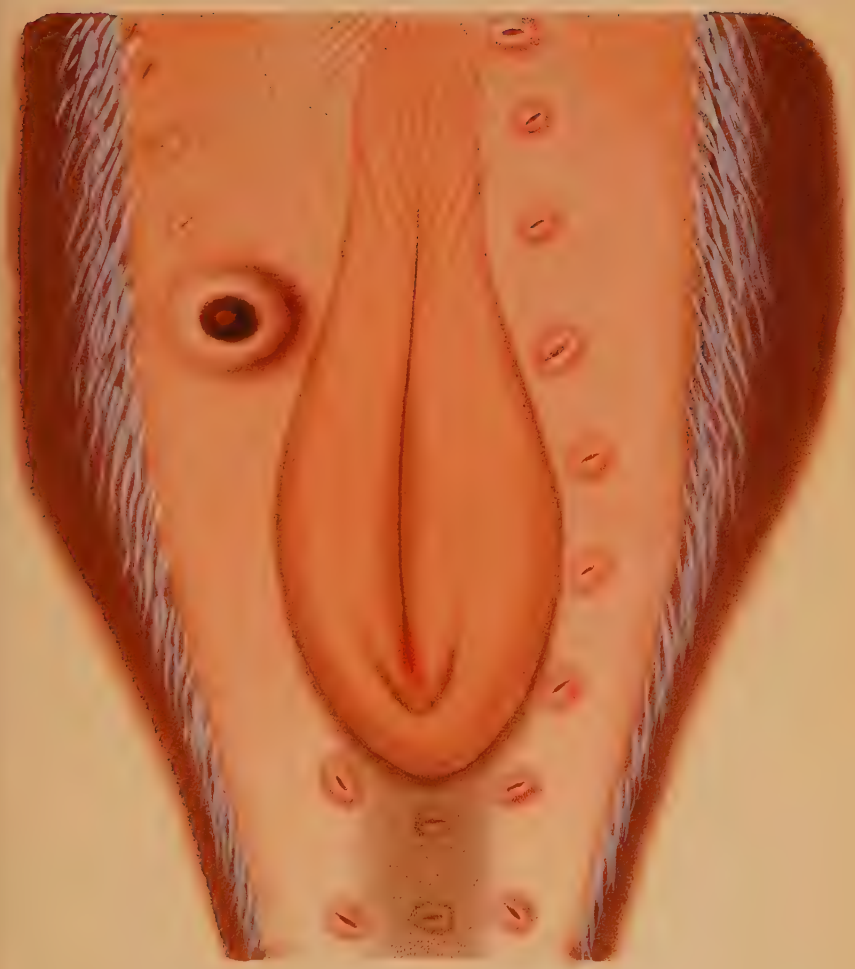
2. The vesicles on the fourteenth day, imperfectly desiccated in the centre, the circumference being still vesicular, and as in other cases, complete desiccation not taking place till the eighteenth day—the best evidences of good lymph on good subjects.

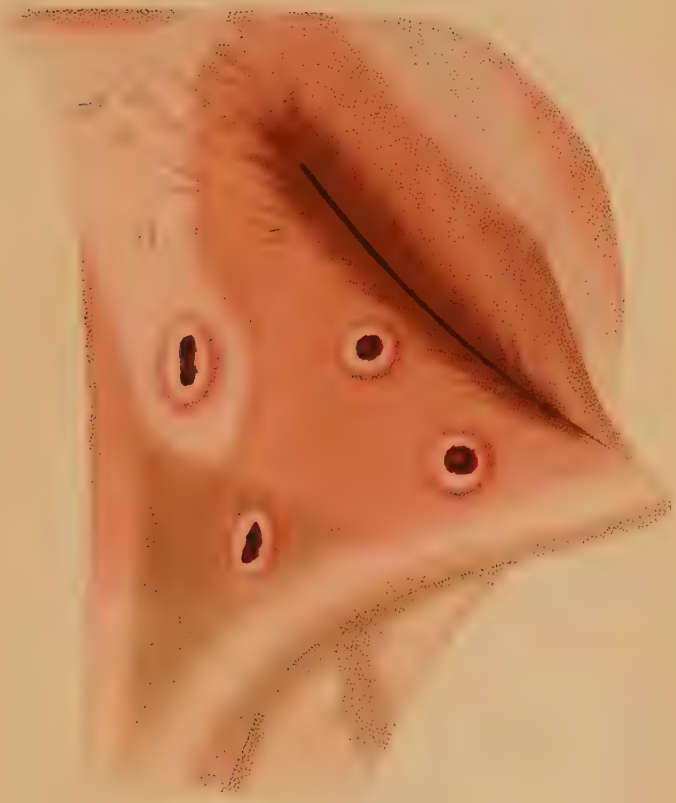
ERRATA.

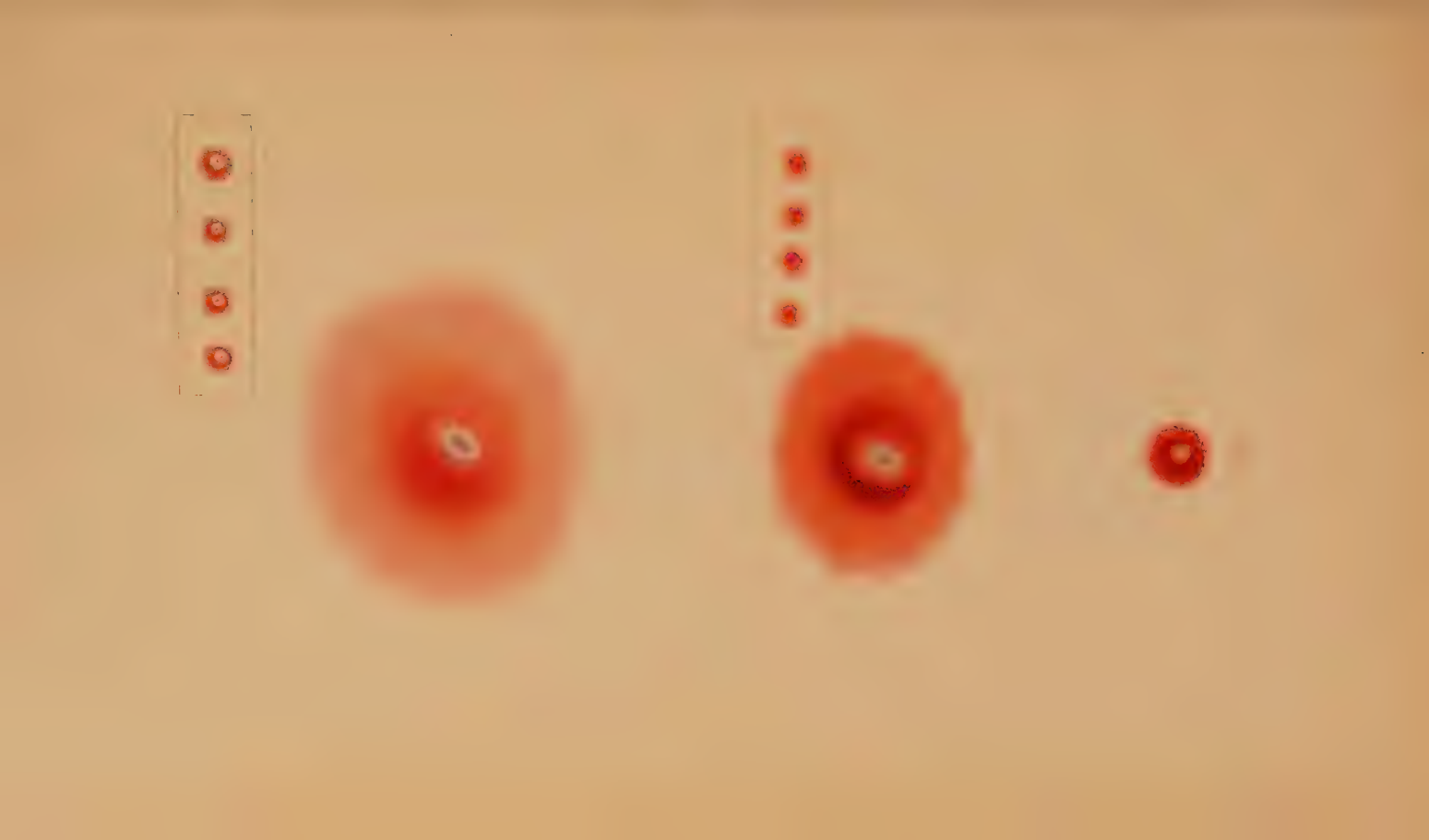
Page 294, ninth line from the bottom, dele "sometimes."
—— 294, tenth line from the bottom, for "strong," read "stoney."
—— 298, fourteenth line from the top, for "hard," read "harsh,
—— 312, second line from the bottom, for "renewed and renewed," read "removed and renewed."
—— 328, thirteenth line from the top, for "shall," read "should."
—— 331, sixth line from the top, after occurrence, supply "here."
—— 361, third line from the bottom, insert a comma after primary.
—— 362, second line from the bottom, for "are," read "is."
—— 373, third line from the bottom, for "umanizato," read "umanizzato." Same line, for "cosé," read "cosi."
—— 393, tenth line from the bottom, for "scar," read "crust." Same page, ninth line from the bottom, for "it," read "the scar"
—— 395, fourth line from the bottom, for "his," read "its."
—— 401, tenth line from the bottom, for "variolation," read "vaccination."

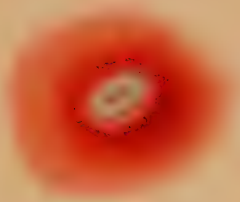
I. Sadler lc.

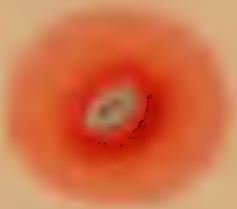
Fig. 1

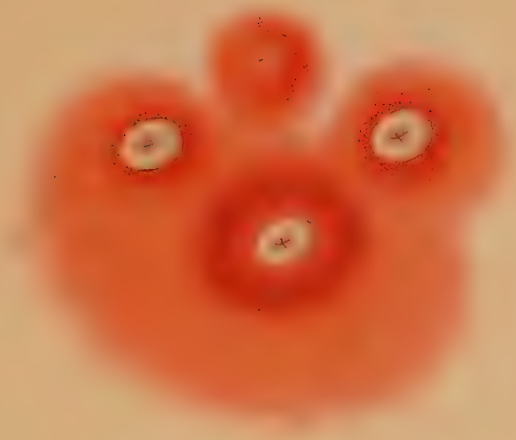


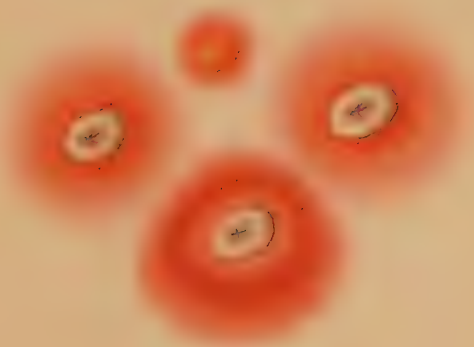


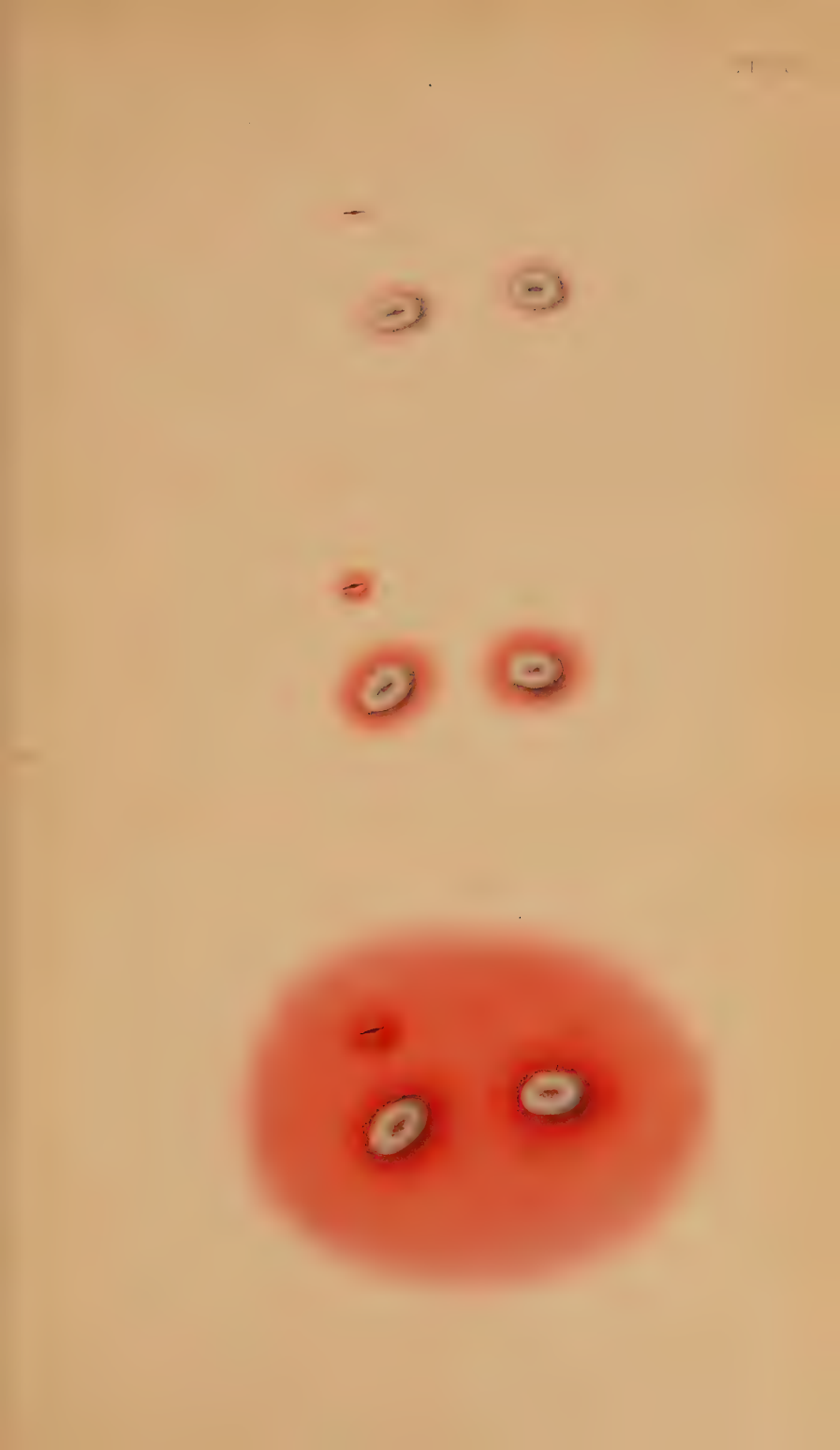












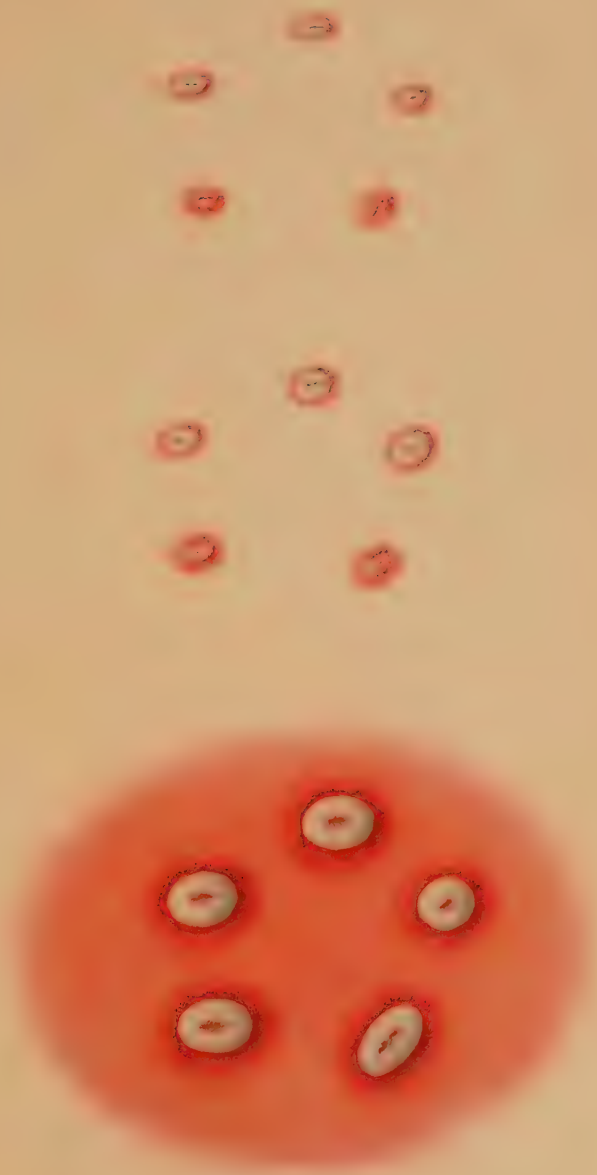
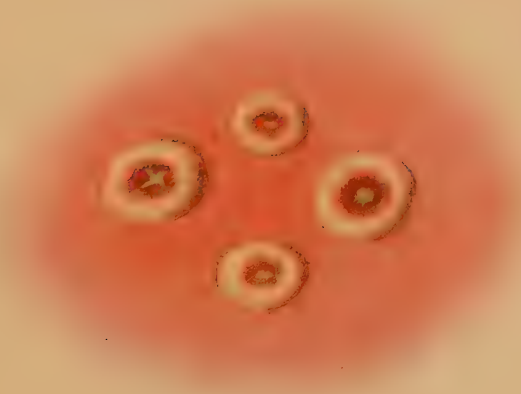


Fig. 2.



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APPENDIX.

THE FOLLOWING LIST OF NEW MEMBERS ARRIVED TOO LATE FOR INSERTION IN THE PROPER PLACE.

A.

Andrews, William, Esq., Surgeon, Salisbury.
Arnold, —— Esq., Surgeon, Maddington.

B.

Bennett, —— Esq., Surgeon, Shaftesbury.
Buckland, J. L., Esq., Surgeon, Shaftesbury.

C.

Case, William, Esq., Surgeon, Fareham.
Clarke, Robert, Esq., Surgeon, Farnham.
Covey, —— Esq., Surgeon, Basingstoke.
Crozier, —— Esq., Surgeon, Hindon, Wilts.
Cullis, J. W., Esq., Surgeon, Clunn, Salop.

D.

Day, Charles, Esq., Surgeon, Cowes.
Dyer, —— Esq., Surgeon, Ringwood.

F.

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J.

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P.

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S.

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Sweeting, William, Esq., Surgeon, Bridport.

W.

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Wooldridge, Henry, Esq., Surgeon, Botley.

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1st.—Collection of useful information, whether speculative or practical, through Original Essays, or Reports of Provincial Hospitals, Infirmaries, or Dispensaries, or of private practice.

2nd.—Increase of knowledge of the medical topography of England, through statistical, meteorological, geological, and botanical inquiries.

3rd.—Investigations of the modifications of endemic and epidemic diseases, in different situations, and at various periods, so as to trace, so far as the present imperfect state of the art will permit, their connexions with peculiarities of soil or climate, or with the localities, habits, and occupations of the people.

4th.—Advancement of medico-legal science, through succinct Reports of whatever cases may occur in Provincial Courts of Judicature.

5th.—Maintenance of the honour and respectability of the profession, generally, in the provinces, by promoting friendly intercourse and free communication of its Members; and by establishing among them the harmony and good feeling which ought ever to characterise a liberal profession.

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